

RECORD

717 F

J. R. Hosteng

Collection Book

No. 76

31155 - 31782

Aug. 20, 1962 from 2000-170

(800) 25-400

1000

31-57 ..... added to present stock - Evans 4  
31-58 ..... 1000-1000

31-59 ..... added to present stock - Evans  
31-60 ..... 1000-1000  
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31-67 ..... 1000-1000  
31-68 ..... 1000-1000

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Collection and Field Note Book

No. 26

(January 15, 1950 - February 23, 1950)

(31155 -31782)

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\* \* \*

look up Alt

32039-40

32041 - 52

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look on Rota  
map for  
loc. of  
airstrip  
and  
Moringa plantation  
on road up to  
airstrip.

Write here kinds of labels that  
it may be necessary to bring  
to Depot for replacing  
bad one, or missing one.

pH, 6.5 soil on lava

7.5 mud

7. ash in canyon

7.5 ash in canyon

Begin with  
no. 31155

1155

719 8

begin with 31155  
end with 31782

J. R. Goshberg  
Collection Book

No. 76  
31155 - 31782



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Jan. 15 Mokapu Peninsula,  
n. side  
Pyramid rock  $80^{\circ}$  w. of N.  
High pt. Mohn Manu  $47^{\circ}$  e. of N.

site #1 sea level,  
flat coral rock  
no soil, awash with  
sea water, belt about  
10 m wide or less. perfectly  
flat in general topography  
"solitary bench" awash  
with wave and top roughness;  
almost closed veg.  
largely brown algae,  
rather unevenly closed,  
*Corallina* (2 sp.), *Ectocarpus*,  
*Lithothrix* (?), *Padina*,  
and another brown alga,  
dominants, but in  
different proportions  
on inner and outer  
parts of belt, no place  
with more than 3 (4)  
actually dominant.  
2 layers, 1-2 cm, other, 4-10  
cm.

2-3 m. + strand  
site #2 Flat but rough  
coral rock with gravelly  
soil in pockets,  
mixture of "black sand"  
and coral limestone debris  
Very sparse stand  
of *Leskeia* *patulaeaster*,  
- *manophyllum*, succulent  
leaves, herbaceous stems  
1 layer 5 cm. thick  
(no associated species except  
1 ecological belt) | occasional  
hecnola from next  
belt above, not enough  
to constitute a shrub  
layer, even scattered.

Belt about 10-15 m.  
wide on limestone  
bench just at foot  
of steep bluffs

Obviously very frequently  
subject to spray.

Jan. 18 Looked around at night. Tried to check occurrences reported in Pac. Sci. 3:338-9, 1949. Of the plants seen that were previously reported only *Eleusine indica* deserves any note. It is abundant rather than rare.

31155 *Setaria verticillata* Beauvois.  
occasional around buildings

56 *Eleusine indica* (L.) Gaertn.  
abundant around edges  
of air strip and around paths.

57 *Pandanus tectorius* Park.  
planted around houses (1 plant)

58 *Nicotiana glauca* graham  
1 plant seen, planted

59 *Colocobis urupera* L.  
commonly planted around houses

60 *Schinus terebinthifolius* Radlk.  
planted around houses

unusually robust  
form, culms spreading  
from root crown.

small plant 1 m. tall.

shrub 1/2 m. tall, leaves  
pale glaucous green,  
sub-fleshy; flowers yellow.  
sterile shrub 1-2 m. tall.  
sterile shrub 1 m. tall.

Jan. 19 general inspection of islet with attention to vegetation and to species unrecorded from Atoll; changes since 1946.

The island is still barren-looking, though considerably more luxuriant than in 1946. Principal conspicuous vegetation is *Messerschmidia*, average trees of which are 3-4 m. tall. Shrub layer of *Scavoala* (sometimes forming small tree), *Wedelia*, *Pluchea indica*, ~~taba~~ (common), *P. odorata* (common locally).

Pioneer herb layer by far the most diversified and widespread - found everywhere around establishments, air strip, etc. Esp. on lagoon beach a sterile grass that must be *Parpallum vaginatum* covers large areas almost exclusively. In the wetter places away from the beach *Cyperus feras* (?) forms dense patches.

On freshly exposed coral, *Thyrsanthus minuri* and *Euphorbia hirta* come up in

Kodachrome roll 1 B + W. roll 4.

1-2

growth of *Wedelia biflora* on recently disturbed ground

3-4

*Wedelia biflora* plant

5-6

sawn, closer.

7-8

strip of *Messerschmidia* and *Scavoala* e. of air strip, showing some wind-shear effects.

9-14

pioneer vegetation of shallow-rooted plants on new coral rubble surface.

15-16

Well-grown *Messerschmidia* grove about center of islet.

5-7

8

great abundance. In most weedy patches *Cleusina*, *Chloris inflata*, *Cenchrus echinata*, *Fimbristylis cymosa*,

*Cypera canadensis* + *C. brasiliensis* are common toward sw. end.

The lours of *Cenchrus* are a serious annoyance.

8 1950 Kwajalein Atoll  
Marshall Is.

31161 *Digitaria purpurea* var. *minor* (L.) Benth.  
locally common in waste spots

62 *Euphorbia heterophylla*  
occasional as weed or  
garden plant

63 *Eclipta alba* (L.) Hassk.  
edge of marshy weedy place

64 *Loranthus oleaeus* L.  
weedy coral flat near air strip

65 65 *Tridax procumbens*  
common on weedy coral flat  
near air strip

66 *Euphorbia hypericifolia* L.  
occasional on weedy  
coral flat near air strip

67 one vigorous clump on  
weedy coral flat near airstrip

68 *Conyza bonariensis*  
common on weedy coral flat  
near airstrip

69 *Conyza canadensis*  
occasional on weedy coral flat  
near airstrip.

70 *Pluchea odorata*  
common, in places abundant,  
in vicinity of air strip

71 *Conyza bonariensis* (L.)  
occasional around buildings

72 *Cyperus ~~forax~~ odoratus* L.  
abundant in wet places

73 *Phyllanthus amarus* Schubm. & Th.  
abundant almost everywhere

L. Webster  
1955

Kwajalein Islet

9

erect, bushy herb 1 m.  
tall, lower  $\frac{2}{3}$  of floral  
bracts scarlet, distal  
third green.  
prostrate; rays white.

erect

prostrate and branched  
at base, scape ascending,

erect, tips nodding;  
sap milky.

over 1 m. tall, sterile.

erect, pappus dull whitish;  
flowers white.

erect, flowers white.

shrub 2 m. tall,  
aromatic; flowers  
pinkish white.

flowers white; pappus  
whitish.

caespitose, stems  
bluntly triangular.

erect, this tall in  
protected spots.

10 1950 Marshall Is.  
Kwajalein Atoll

31174 *Amaranthus spinosus* L.  
5 occasional in sheltered  
moist place

76 *Leucaena glauca*  
one small shrub seen,  
in nursery, probably  
planted.

5 77 *Solanum nigrum* L.  
weedy edge of nursery plot

6 78 *Amaranthus dubius* Mart.  
weedy edge of nursery plot

5 79 *Pluchea indica*  
common generally

2 80 *Solanum nigrum* L.  
weedy disturbed ground

1 81  
planted in nursery

4 82 *Stachytarpheta jamaicensis* <sup>water (W. T. H.)</sup>  
planted in nursery  
(but seen elsewhere as weed)

2 83  
planted in nursery

4 84 *Scoparia dulcis*  
abundant in weedy wet places

4 85 *Amaranthus dubius* Mart.  
common locally in coconut grove.

5 86 *Emilia javanica* (Burm. f.) Rob.  
common locally in weedy places

87 *Chloris inflata*  
common & abundant generally  
ctd. on p. 14

Kwajalein Islet

11

erect branched herb,  
stems bronzed by  
red mottling.

shrub 1 m. tall, branched.

tangled bushy-herb, <sup>stem</sup> green;  
berries black, flower white.

erect ~~but~~ bushy herbs  
up to ~~1~~ 1 m. tall, stems  
reddish. (one branch from  
each of two plants on each sheet).

shrub 1 m. tall;  
heads pinkish.

erect, stems <sup>dark</sup> purple, fl. white.

twines, flowers pinkish  
white, unripe pods  
deep purple.

spreading much branched  
herb; flowers violet.

erect, branched herb

~ 6 dm. tall.

erect; flowers pale  
bronze green.

flowers brick red.

Jan. 20 Darrit, Uliga &  
Dalap Islet, e. end of atoll.  
Vegetation quite luxuriant,  
arborescent.  
Pluchea odorata is well  
established on Darrit, in  
places forming greater part  
of shrub layer. Pluchea  
indica also locally common.  
This and a woody plant  
resembling Euphorbia  
hypericifolia, and Choris  
inflata said by native  
informant Mike, to have  
come with Americans,  
not to have been brought intentionally.

## Dalap Islet

31191 *Hedysotis bipinnata*  
common on weedy airstrip

92 *Euphorbia hypericifolia* prostrata Ait.  
common on weedy airstrip

93 *Choris inflata*  
common on weedy airstrip

94 *Euphorbia* ~~Uliga~~ Islet

94 *Euphorbia*  
local along road in sparse woods, around ~~house~~ installations.

95 *Pluchea odorata*  
abundant, forming thickets locally

96 *Pluchea indica*  
common locally  
(Uliga Islet, weedy roadsides)

97 *Cyperus*  
rare in wet places

98 *Physalis*  
tangled herb, fls. yellow.

99 *Physalis*

same informant gave name  
"kejbar" for *Ochrosia parviflora*  
and ~~says~~ said the fruits  
were used as fish-poison  
in old days, also that  
children eat kernels.

Koh. atoll, 17-23 *Pluchea*  
Koh. atoll, 17 *odorata*

Koh. atoll, 17-20 *Choris*  
Koh. atoll, 9-11 from air.

prostrate, flowers  
white, plant chlorotic.  
prostrate, purplish  
green, stems red-purple.  
small tufts, raceme  
purplish.

erect, tips arched  
aromatic  
shrub 2 m. tall, rounded;  
flowers pinkish white.  
shrub 1 m. tall; heads  
pinkish.

tangled herb, fls. yellow.

14 1950 Kwajalein atoll  
Marshall Is.  
(ctd. from p. 10)

31182 *Dactyloctenium aegyptium*  
5 rare, roadside

3 85 *Paspalum vaginatum*  
abundant in many  
places near inner  
beach

90 *Cyperus*  
common very locally in  
wet places around airport  
buildings

abundant

31200 *Cyperus rotundus* L.  
400' weed in nursery plot, rare

Kwajalein Islet

15

dense spreading  
- clump  
forming dense  
ground-covers.

spreading tufts.

Jan 21

with in coconut grove #47-75.

Site #1 - with end of island  
- seaavola brush. (most of it  
broken. I pinnace plants)  
found cover in the gaps -  
seaavola & Mess. shrubs  
considered rosette shrub.  
Ipomoea per caprae a bit.

Site #2 - Coconut plantation  
seriously destroyed by wave  
action, second layer of  
seaavola, Mess. etc.  
solid undergrowth of  
Wedelia.

Site 3 - n. of center of I.  
open ground - solid  
layer 1-2 m. deep of  
Wedelia biflora

Site 4 - crater of I. toward lagoon  
open ground solid  
layer 2-3 m. deep of  
Ipomoea pes-caprae

Site 5 - center of I. just inside  
windward beach - almost  
solid layer of Yag-na ms.  
1-2 dm. leaf-blk.

Site 6 -  
Kodakrome 73-24 from pug.  
Mar. 1958  
Isol. atoll. 1-2 m. + per. m.  
Buildings covered by  
Wedelia, Ipomoea, etc.  
Pinnace here in pug.  
Kod 73-23 from  
Site 7 - Wed. p. 1.

Site 8 - wide bare  
strip from windward  
to lagoon beach,  
mostly occupied by  
a ~~tree~~ stand of  
Fimbristylis cymosa  
patches here and there  
of Chloris inflata,  
between tufts of  
Fimbristylis are  
plants of Portulaca  
samoensis. Wedelia  
and esp. Ipomoea per-  
caprae are encroaching  
from the edges. Part of  
the strip is still completely  
bare.

Site 9 - Forest of Messerschmidia  
4-6 m. tall, with some  
Pisonia. Undergrowth  
largely ~~green~~ shaded out.

3 1701 *Allophylus timorensis* (DC.) Bl.  
rare, in *Messerschmidia* forest  
5 02 *Chloris inflata*  
common along trails, nowhere  
else except patches in  
open area.  
3 03  
on moist soil in sheltered  
area.  
6 04 *Fimbristylis cymosa*  
abundant in large open  
area.

Revegetation on Bigej  
shows some interesting  
tendencies. Most of the  
bare ground has been  
covered either by a dense  
mat of *Ipomoea pes-caprae*  
or by a 1-2 m. deep pure  
stand of *Wedelia biflora*.  
The usual annual weeds  
exist only along trails, and  
immediately around houses.  
*Pluchea odorata*, though  
here in 1946, exists only  
as a few half dead bushes  
obviously losing out in  
competition with the  
*Wedelia*. A plant or two  
of *P. indica* still persists  
around buildings.  
A few patches of *Vigna*

shrub 2.5 m. tall,  
almost sterile "kubuk"  
in dense clumps,  
leaves somewhat  
stiff.

marinae ~~stiff~~ in  
almost pure stand  
exist.

What was low  
brush of *Messerschmidia*  
almost impenetrable  
in 1946, is now a  
dense forest 5-6 m. tall,  
fairly open beneath.  
Some *Wedelia* has  
been there but is now  
dead or almost so.

Coconut trees scattered  
over marshy  $\frac{1}{3}$  show the  
effects of wind and  
spray.

*Chloris inflata* has  
become common along trails.

Jan. 22 - This islet has been more completely destroyed than any other I have seen. No coconuts left standing, no trees of any size. At the south and north ends are numbers of *Messerschmidia* 3-5 m. tall. Young *Scaevola* is also common here. At the south end is some soil, and large patches of *Vigna marina*.

*Wedelia biflora* in pure stand on *Ipomoea pes-caprae* in pure stand cover large areas and are the dominant plants over most of the islet.

- 31206 *Pseuderanthemum* *caruthersii* <sup>var.</sup> *caruthersii*  
planted around buildings
- 3 07 *Paspalum vaginatum*  
common in open places on lagoon side, some on outer side.
- 3 08 *Pluchea odorata*  
one small colony in open coral flat.
- 2 09 *Vernonia cinerea*  
occasional in open places
- 3 10 *Pluchea indica*  
abundant in open bare part, unable to compete with *Wedelia*.

except the central section. Apparently continual traffic has compacted the limestone debris into a partially consolidated mass that will scarcely support anything. This ~~is~~ extends over most of the central portion. The center is absolutely bare, except for sparse *Timbristylis*. No *Chloris inflata* seen.

*Pluchea indica* abundant in center section but does not stand up against *Wedelia*. *P. odorata* only one small colony.

shrub 2.5 m. tall, flowers white with purple dots in throat, sterile, forming dense mat.

sterile shrub 2 m. tall.

flowers purple

shrub 1 m. tall; heads pinkish.

22 1950 Kwajalein Atoll

31211 *Polyscias scutellata* <sup>aria</sup>  
planted by building  
#  
12 *Coccoloba uvifera* L.  
planted by building  
13 *Clerodendrum inerme*  
in thicket near buildings

The vegetation on the windward side around the buildings at the south end is a low mixture of *Paspalum vaginatum*, *Triumfetta procumbens*, *Vigna mahnii*, *Ipomoea pes-caprae*, *L. tuba*, *Wedelia*, etc. with patches of *Seawola*, bushes and small trees of *Messerschmidia*, occasional planted coconuts and *Pandanus*.

There are a scattering of young coconut trees, some already flowering, all over the island except in the center.

Ebeye I.

23

sterile shrub 1.5 m.  
tall, leaves very concave above.  
sterile shrub 1.5 m.  
tall.  
scrambling shrub,  
flowers white with maroon stamens and pistil.

24 1950 Agana

✓ Jan. 24 Omagua,  $\frac{1}{4}$  mi. e. of  
County Jct., w. of Agana

4 m.  
Secondary thicket on base  
of limestone cliff. Mixture  
of *Leucaena*, *Triphasia*,  
*Piper*, *Carica* & *Heterospatha*  
on talus at base of cliff.  
*Triphasia* forms a rather

34214 *Piper guahamense*  
in secondary thicket  
on limestone talus

✓ Jan. 24 Ravine of Lower Fonte R.  
 $\frac{1}{4}$  mi. s. e. of County Jct. w. of  
Agana 8 m.  
thickets on limestone  
bluffs - upper story of  
scattered *Artocarpus altilis*  
10 m. tall. second dense one  
of *Leucaena* and *Heterospatha*  
 $\frac{1}{2}$ -1 m. tall. Undergrowth  
of *Triphasia*, *Pandanus dubius*  
and seedling *Heterospatha*.

15 *Heterospatha elata*  
common on limestone bluffs

13 M  
25

Pan. roll #16 - *Heterospatha*  
*elata*.

impenetrable tangle.  
*Piper* grows with it.  
*Heterospatha* sterile at  
this season. occasional  
also on cliff above.

shrub 1.5 m. tall,  
leaves glossy above,  
spikes erect. root has  
slightly anaesthetic  
quality, somewhat aromatic.

The whole tangled  
with lianas of *Ipomoea*  
and *Alrus*.

Substratum of rough  
limestone outcrop  
and boulders.

Pan. roll #17 -  
Kodachrome roll # last 5 shots  
- *Heterospatha*.  
tree 6 m tall, leaves  $2\frac{1}{2}$  m. long,  
infl. with green fruit in lower  
leaf axils, 3 times branched, <sup>light</sup> gray.

26

1950 Guam

Tuguan Point,

Jan. 24 - cliffs near coral pit - vegetation here of brush + low trees, tips of most plants killed, sprouts coming from below. whole has rather brown appearance, almost burned-looking, probably result of salt spray blown from sea below. Waves obviously dashed over coastal strip. 115m.

31216 *Allophylus*

just below top of limestone cliff

5 17 *Chloris radiata* limestone common at top of cliff18 *Hedysotis foetida* rare on freshly broken up limestone19 *Ipomoea tuba* common at top of limestone cliff.

27

Kodachrome roll 2<sup>1-6</sup> - typhoon damage to coastal plain vegetation also to trees on top of cliff. *Leptadenia*, *Cynometra*.

- shrub 0.8 m. tall; flowers white. culms ascending to erect.

flowers white, anthers deep purple.

twiner, leaves dull, not fleshy, flowers white, not open in afternoon.

28

1950 Guam

13° 26' 47"  
144° 49' 02"115 M  
29

Jan. 24 Limestone flats 70 m.  
near Coral Pit, just  
back of Taguan Point  
Fadian Fadian ~~4000~~

Dense low forest 8-10 m.  
tall, much torn by the  
typhoon, some trees knocked  
down.

Substratum very rough  
coral.

Veg. roughly 2 layers,  
1 quite mixed tree layer  
with *Pandanus*, *Lapatea*,  
*Guettarda*, *Macaranga*,  
*Intsia*, *Cynometra*, *Ficus*,  
*Clerodendron* (?), *Guamia*, etc.

*Aglais* none (ex. in places *Pandanus*  
*Tectorius*) abundant enough  
to be called dominant.

Mesophyllous.  
Shrub layer of  
*Cycas*, *Pandanus*, *Pipturus*,  
*Excavatio*, etc. + young  
of tree layer. 2-3 m. tall  
*Cycas* most conspicuous  
A few vines, as *Flagellaria*,  
etc. *Epiphytis* ferns  
(*Pyrosia*) on a few trees,  
abundant where found.

*Redes* (a small sp.) common  
and troublesome.

31220 *Polyscias grandifolia* Coll.  
occasional in forest

5 21 *Laportea*  
common in forest

2 22 *Eragrostis falconeri*  
pioneer on fresh broken  
coral limestone in open.

5 23 *Chloris inflata*  
pioneer on fresh broken  
coral limestone, in open.

5 24 *Cochlospermum austriacum*  
pioneer on fresh broken  
coral limestone, in open.

erect rarely  
erect ~~branched~~ branched shrubs  
1-7 m. tall, fruit immature.  
& small tree 7 m. tall.  
(others seen up to 1 m. diam.)  
fruiting inflorescences  
with smaller branches  
enormously swollen  
and fleshy, calyx and  
fruit not fleshy.  
spreading

erect from decumbent  
base.

prostrate herb,  
extensively branched,  
stem reddish; flowers  
yellow, fruit  
strongly  $\frac{6}{7}$   $\frac{10}{8}$  winged

✓ Jan. 27 - Agaña swamp  
east of Agaña

A low expanse of  
reeds, with occasional  
low spots, excavations  
and channels with  
water in them.

Dominant plant is  
*Phragmites karka*.  
*Aerostichum aurum* common.  
*Pandanus* occasional.  
*Hibiscus tiliaceus* occasional

Conclusively shows that  
*Phragmites* and *Aerostichum*  
will grow in fresh  
water, and on wet  
ground with no standing  
water.

31225 *Dryopteris*  
edges of swamp along road,  
coral soil.

3 26 *Dryopteris*  
around excavation in  
swamp.

3 27 *Myriophyllum* <sup>fragrant</sup>  
submerged in <sup>stagnant</sup> water of  
channel.

3 28 *Bacopa monnieri*  
thick mat in open  
trampled place.

Pan roll A 27-28 view from  
Kod roll 2 7-8-9 hill near Tinajon

fronds erect, rhizome  
just beneath surface.  
fronds erect, tips of fertile  
pinnules revolute.

some portions of ~~base~~  
leaves swollen, aerogenous.  
prostrate; leaves  
subfleshy; corollas  
lavender.

34 1950 gram (13° 27' 40" N  
44° 45' 30" E B)

15M  
35

31229 *Sida acuta* L.  
5 on abandoned weedy road  
in swamp.  
6 30 *Sida rhombifolia* L. ?  
common on abandoned weedy  
road in swamp.  
6 31 *Merremia gemella* (Burm. f.) Hall. f.  
occasional on old road  
in swamp.

suffrutescent herb  
1 m. tall, flowers  
orange-yellow.  
water shrub up to 2 m. long,  
stems pale gray-green;  
- flower orange-yellow.  
prostrate; flowers clear  
yellow, anthers white,  
curved.

✓ Jan. 25 Agana Spring,  
water works.  
large pool of clear  
water, bottom covered  
with *Potamogeton*,  
some *Myriophyllum*,  
floating algae being  
skimmed off.  
5 72 *Potamogeton*  
dominant on bottom of pool  
; 33 alga  
floating on surface of pool  
; 34 *Myriophyllum*  
rooted in center of  
pool, rising to surface  
35 *Pentella repens*  
forming lawn around  
pool 3-5 dm. above water  
36 *Zelkina pendula*  
planted on dry stone wall

a very few floating  
leaves, these plane,  
submerged ones small,  
crisped, sterile.

lower parts of leaves  
smaller, aerogetous.

prostrate; flowers white,  
lobes slightly dentate;  
fruit green.

plant prostrate to  
ascending stems fleshy,  
leaves sub-fleshy, margin below, magenta.

31237 *Lippia nodiflora*  
 3 growing around nursery,  
 apparently spontaneous.

4 Jan. 25 Lower Fonte River  
 w. of Agana, s.e. of  
 County Jet.  
 secondary thickets and  
 disturbed places.

38 *Melochia*  
 rare in thicket

37 *Heliotropium indicum* L.  
 occasional on freshly  
 disturbed broken coral

40 *Merruvia bedanea* (Burm.  
 f.) Hall. f.  
 occasional along  
 weedy roadsides

41 ~~*Osteospermum*~~ *cannabina*  
~~*canescens*~~ <sup>canescens</sup>  
 common on freshly  
 disturbed broken coral  
 along road

prostrate, peduncles  
 erect, maroon, corolla  
 white.

small tree 5 m. tall,  
 leaves gray above;  
 flowers deep crimson  
 in center, fading  
 distally to dull magenta.  
 erect ~~perennial~~ herb  
 up to 0.8 dm. tall; leaves  
 strongly rugose,  
 flowers lavender.  
 prostrate, twining,  
 flowers clear yellow,  
 calyx lobes with  
 projecting folded  
 apex; anthers white,  
 curved.

erect, branched herbs,  
 1-1.5 m. tall, flowers  
 yellow, closed,  
 articulation between  
 seeds in pod, swollen.

38 1950 Guam

13° 28' 20" N  
144° 41' 24" E

15A  
38

✓ Jan. 24 Agana Swamp  
e. side.  
Site, meadow with  
*Panicum purpurascens*,  
*Ipomoea* sp. *Cleocharis* sp.,  
*Polygonum* & *Jussiaea*  
0.4-1 m tall counting  
*Cleocharis* as one, there  
are 2 layers, but the  
upper one is only partly  
present. could best  
be regarded as one,  
being grazed by a  
few cattle. Part also  
cult. as taro patches.  
Is a belt bet. base of  
~~the~~ bluffs and edge of  
cane brak. soil black  
and peaty. water  
table near surface.

Site 2 solid brake of *Phragmites australis* 4-5 m. tall, only other species is a steril leguminous vine that is occasional ground a black mud, water table just below surface. Obviously inundated part of year because lower few nodes of canes bear abundant roots.

site 3 same but with  
uneven layer of  
*Hibiscus tiliaceus*  
6-7 m. tall. Various  
other plants mixed in  
on higher spots.  
water table lower,  
 $4 \pm$  dm. see p. 32.  
On roadsides, etc.  
*Muntingia calabura*  
is common. also *Lida* spp.

Kod. roll 2 <sup>10-11-12</sup> "zonation in swamp  
Pan roll A 29-30

31242 *Eleocharis*

1 abundant in low  
spots in open part  
of swamp

2 43 *Polygonum*  
common in open part  
of swamp

7 44 *Iphormoea*  
abundant in open part  
of swamp rooted in mud.

45 *Aeschynomene*  
one individual seen in  
open part of swamp

✓ 46 *Sigesbeckia*  
Forest coral fell along  
road.

47 *Eriogonis pilosa*

48 *Hedysarum*

49 *Mitracarpum hirtum*

sterile

stems to 1 m. or more long,  
prostrate, ascending  
at tip, flowers white  
in erect raceme.

stems ascending at  
tip, flowers purple in  
throat, fading to white  
at edge of limb.

shrub, m. tall,  
fls. yellow, banner  
red. outside except  
at edges.

stems spreading  
prostrate, flowers  
purple, standard white  
fls. white.

erect, flowers white.

42

1950 Guam 13° 27.08' N  
144° 43.02' E

Jan. 27 - Heads of Fonte R. 145 m. brak of Phragmites in bottom of shallow ravin. fine stand of P. katra, dense, almost impenetrable, water flowing into it from headward, but none seen as far as I entered.

flat area surrounding this badly wind eroded. Pennisetum dominant.

31250 *Polygala*

3 common in eroded places

4 51 *Dryopteris*  
one small colony in wet volcanic soil5 52 *Dryopteris*  
common around edges of reed brak in wet volcanic soil

2 53 desiccating at base bed in eroded volcanic soil

4 54 *Pennisetum*  
dominant plant on eroded soil7 55 *Cyperus*  
in desiccating depression1 56 *Ammania coccinea* Rottb.  
one plant only in desiccating depression on volcanic soil.10M  
43

soil brick red. pH 7.0  
wet. deep. 7.1  
clay.

Along edges of brak, *Dryopteris* and *Lygodium scandens* common, along with weeds such as *Elephantopus*, *Mimosa*, *Leucaena*, *Hyptis capitata* etc.

rhizome prostrate  
fronds erect, only one

erect, from very  
shortly decumbent base.

small tufts.  
volcanic soil.  
petal. crimson.

Jan. 23 - Just east of Talofofo Bay,  
Looked for Ruppia in  
mouth of small stream.  
found none.

Vegetation beaten down in  
an upstream direction by  
typhoon. Very little foliage  
left.

Kod. roll 2 13-14 Typhoon  
Pan. roll A 31 damage.

✓ Jan. 23 Talibofa River Valley  
estuary running several  
miles inland.

In lower part bounded  
by broad belt of *Phragmites*,  
then a belt of *Barringtonia*  
*racemosa*, above by  
secondary thickets  
and cultivated patches.

Site 1 pure stand of  
*Phragmites* bracts  
3-4 m. tall, rather matted,  
on wet ground, probably  
flooded by really high  
tides.

3/12/57 *Opuntia*

lying in grass by roadside,  
taking root, branch erect.

✓ 33 *Acalypha andicola*

roadside weed

✓ 59 *Pseudoelephantopus spicatus*  
common weed in clearings

No sign whatever of  
*Ceratopteris gaudichaudii*

Kod. Roll. 2 13-14 patch of *Acacia*  
Pan. roll A 32

Site 2 pure stand of  
*Barringtonia racemosa*  
about 4-5 m. tall,  
rather open beneath,  
but with a shrub  
layer of young  
*Barringtonia* averaging  
about 1 m. tall.  
Soil a black mud, channels  
between bases of trees  
to depth of about 2 dm.

one branch erect, others  
rather ~~too~~ small and  
somewhat shrivelled, but  
all rooting. Possibly  
discarded from someone's  
potted collection, but  
a strange place to throw  
it.  
erect.

wet herb, leaves dark green;  
flowers white;

48 1950 Guam

✓ Jan. 29 just S. of Talofatto Bay  
30 m.  
31240 *Spiraea bona* - note 1  
common along roadsides

49

<sup>15-17.</sup>  
Kod. Roll. 2 breadfruit tree  
Jan Roll A. 33 damaged by typhoon  
vine, flowers white,  
already collapsed when collected  
shortly before noon.  
Leaves rounded to lobed.

Jan. 29 - 10 mi. n. Inarajan

Jan. 29 - Inarajan

Jan. 29

Jan. 29 near s. end of I.

Jan. 29 Merizo

Jan. 29 Umatag

Jan. 29 near s. end of I.

Pan. roll A. 34-36 - Erosion  
Kod. roll 2 18-23 - scars &  
patches of  
woods in ravines  
in volcanic area.

Pan. roll B - Typhoon damage  
Kod. roll 2 - to nipa

Pan. roll B. Malateq will  
Kod. roll 2 plants damaged  
by typhoon

Pan. roll B coconut  
Kod. roll 2 plantation  
damaged by  
typhoon.

Pan. roll B Kod. roll 2  
Old bell tower  
& bay in auxiliary gas  
tank outriggers canoe.

Pan. roll B. Kod. roll <sup>2\*</sup> 3.  
views across bay  
and up toward mts.  
with patches of  
forest. Old Casuarina  
on erosion scar. Open  
air library, volleyball  
game.

Pan. Roll B. Kod. roll 3  
Typhoon damage.

Jan. 29 Umatag

Hills of volcanic soil  
with Miscanthus  
and patches of Glyceria,  
serious erosion scars,  
scattered cassavaing  
and Pandanus trees

31 61 62 63 Timorius

62 63 Timorius

scattered shrubs in  
open Miscanthus area.

63 Fibre wood in  
the top of a ridge area.

Hills bet. Merizo & Umatag  
have been burned over  
some.

Condition of Rhizophora  
at south end is rather  
surprising. The more  
exposed young trees are  
apparently completely  
dead. How they were killed  
is not at all clear.

shrub 1 m. tall, fruit green.  
shrub 1 m. tall ~~fruit~~ flower  
greenish white, 4 - merous.  
- leaves stiff.

Typhoon damage is of  
several sorts

1. Actual breaking and  
uprooting of trees.
2. Killing of <sup>leaves and</sup> smaller  
branches by desiccation
3. Killing of leaves and  
smaller branches by salt spray.
4. Killing or severely injuring  
of trees & shrubs by  
waves of salt water.
5. Cutting away of soil  
by waves of salt water  
or runoff of fresh water  
(very severe in places)

Feb. 1 - View from air - <sup>from</sup>  
 greater part of northern section has been disturbed. Primary forest still exists in small patches, mostly around cliffs and at their tops, and a fairly large patch in the triangle between the roads to North Field and Northwest Field.

Feb. 1 View of Rota from air - Forest still exists on and near cliffs between terraces, and on part of the top two terraces. Small patches beyond air strip. All level areas of any size seem to have been cleared, and most of them seem to stay cleared. That near the airstrip seems to be reverting to woody vegetation.

Feb. 1 - ~~top~~ <sup>Agriigan</sup> View from air  
 Top terrace almost completely cleared, with wind break. Second largely cleared. patches on others.

Feb. 1 View of Tinian from air. Woody vegetation coming back in many parts.

Low dense belt of vegetation at edges of cliffs could be mistaken for mangrove.

✓ Feb. 1 - Kannat Laulau,  
above Magicienne Bay.  
Thick red soil mixed  
with coral debris,  
disturbed area

31264 *Miscanthus floridulus*  
local on steep slope  
below road cut

✓ 65 *Indigofera spicata* Forsk.  
occasional around  
abandoned installations

✓ 66 *Sorghum halepense*  
abundant in waste  
areas everywhere  
at low altitudes

✓ 67 *Psidium guajava* L.  
only one plant seen  
(said to be kept under  
control by an insect)

✓ 68 *Grewia mianensis*  
rare, in undergrowth  
in rocky place.

✓ 69 *Psychotria miana*  
common in remnant  
of woody vegetation

✓ 70 *Pennisetum purpureum*  
var. *meritum*  
common in old fields  
and thickets.

✓ 71 *Laportea saipanensis*  
remnant of old forest  
out in open.

75

dense thicket, canes  
several m. tall.

low spreading,  
rather compact bush,  
flowers reddish-orange.

shrub 1 m. tall,  
sterile.

shrub 1-1.5 m. tall.  
flowers white, ripe  
fruit red.

forming small  
bushes, culms  
up to 3 m. tall, 1.5 cm.  
thick, flowering  
spikes bare.

large old trees, almost  
defoliated, sterile. Trunk  
6 dm. in diam.

31272 *Phaseolus lunatus*,  
6 established in abandoned  
field, forming a dense  
blanket over a limited  
area

5 73 *Operculina ventricosa*  
common, covering large patches.  
Feb. 1 - O'neai

secondary vegetation

74 *Lesbania ~~canabina~~*  
common as a pioneer on  
bare ground, and where  
moisture is sufficient  
as here at edge of marsh,  
forming a shrub 3-4 ft.  
m. tall, with woody  
stem 6 cm. thick, flowers  
yellow, brownish without,  
in short pendent racemes

75 *Acacia farnesiana*  
one large plant seen,  
in weedy place.

Feb. 1 - Chalan Kanoa  
waste places, back  
of beach, mostly  
around buildings

vine, flowers white.

large liana, thickly  
blanketing ~~the~~ large  
patches; flowers white,  
bracts pale purplish  
green, top of outer layer  
of fruit dehiscent off.

76 shrub 4 m. tall,  
branched at base;  
flowers orange yellow,  
very fragrant, fruit green.

31276 *Chloris radiata*  
 5 common along roads  
 and ~~so~~ around buildings

77 *Cyperus*  
 common locally  
 in wetish places  
 in coral debris

8 78 *Ficus*  
 local, just behind  
 beach

Feb. 2 *Tanapaq*  
 flat moist ground and  
 dry roadsides

79 *Pluchea indica*  
 dry roadside

80 *Emilia sonchifolia*  
 moist ground, rare

81 *Ammania coccinea* Rottb.  
 moist ground, rare

82 *Jatropha gossypiifolia* L.  
 planted along roadsides  
 as ornamental

Feb. 2 *Olea*  
 sparse second growth  
 on flat ground

83 *Melochia*  
 occasional

erect tuft.

small tree 5 m.  
 tall, ripe fruit  
 purple-black,  
 soft.

shrub 0.5 m. tall  
 flowers lilac, heads  
 pubescent.  
 petals lavender-purple.

shrub, m. tall,  
 young growth and  
 petioles deep maroon,  
 glands on hairs green,  
 sticky; flowers red.

rounded bush 2.5 m.  
 tall, flowers red in center,  
 fading to white at ends  
 of notched petals.

✓ Feb. 3 - south of Garapan  
flats of coral sand  
just above beach.

31284 *Saccharum spontaneum* L.  
several clumps in  
opening in brush

✓ Feb. 3 - Lake Busupre, west  
side  
slightly brackish lake,  
surrounded by casuarina,  
with openings with  
*Paspalum vaginatum*,  
thickets 3-4 m. tall of  
*Hibiscus tiliaceus*, on edge  
Scirpus  
in water at edge of lake

Feb. 3, just east of  
Ajetris, <sup>2<sup>nd</sup> of Fairpan  
dry flats of coral  
sand and gravel.  
Extensive uneven  
areas of *Saccharum*  
*spontaneum*.</sup>

erect, rather loose  
clump up to 4 m. tall.

Kod. roll 3, Pan roll B.

of these clumps of  
*Acrostichum aureum*,  
*Clerodendrum inerme*, etc.  
Scirpus at water's edge,  
burning floating mat  
at outside edge.  
culms terete.

Feb. 3 - base of Kagman Peninsula, near Chacha  
- thickets on broken ground

31 286 *Mucuna*  
at side of road on slope

3 87 *Chloris inflata*  
roadside

5 88 *Chloris virgata*  
roadside, common

5 89 *Mimosa invisa* Mart.  
roadside, local

large vine, flower a pale  
- green fleshy.  
spikes purplish.

spikes erect,  
- contiguous.  
semi- scandent,  
tangled, flowers  
light purple.

Feb. 3 - near As 7<sup>o</sup>  
e. of Mt. Takotchan  
roadside in hilly  
area

3 90 *Buddleia asiatica*  
local along road

erect shrub 2 m. tall,  
flowers white.

✓ Feb. 1 south side of  
Kagman Peninsula, w. of  
Kagman Point 30 m.  
terrace of limestone  
becoming exceedingly  
dissected toward edge  
of cliff

31291 *Bikkia mariannensis*,  
abundant, dominant  
in places in scrub on  
very rough rock.

92 *Callicarpa canescens*  
in sheltered places on  
rocks

93 *Jasminum simplicifolium*  
common in scrub

94 *Capparis cordifolia* Lam.  
common in scrub near  
cliff edge

95 *Myoporum boninense* Koidz.  
common in scrub near cliff edge

96 *Hyptis*  
common in openings  
back from cliff

97 *Emilia sonchifolia* (L.)  
rare, one plant seen in  
opening away from cliff

Kod. roll 3 end  
Pan roll B

low dense brush of  
*Bikkia*, *Scorodola*, *Myoporum*,  
*Capparis*, *Canthium*, *Jasminum*,  
*Wedelia*, with *Cynometra*, *Tree*,  
and *Pisonia* away from  
edge

shrub 1.5 m. tall  
flowers white.

low shrub, seriously  
cut back by salt spray.  
buds purple.

low, semi- scandent  
shrub, mostly sterile,  
bright green.

tangled subterranean  
herb, leaves <sup>suberous</sup> gray-green,  
fls. white, old ones  
faded, new ones about  
to open at 5 p.m.

prostrate; leaves fleshy,  
bright green. flowers  
white, odorless or almost so.  
erect herb, to 2 m. tall,  
highly aromatic; leaves  
rugose, flowers pale.

flowers purple

31298 *Tricholaena* <sup>rosea</sup> ~~spiss~~  
4 locally common in openings away from cliff

1 99 *Vernonia cinerea*  
rare in openings away from cliff

31300 *Leucadela frutescens* (Mill.) Kr.  
6 common, especially near edge of cliff

4 01 *Phyllanthus mariannensis*  
occasional in scrub away from edge of cliff

5 02 *Hedysarum albopunctatum* (Men.) Tosh.  
common on bare coral roadbed

5 03 ~~Cleistes~~ *Callicarpa candicans*  
occasional in scrub this one away from edge of cliff.

5 04 *Leucadela frutescens* (Mill.) Kr.  
common in scrub ~~near~~ <sup>near</sup> cliff edge.

erect

erect; flowers purple.

low shrub, 1 m. tall, leaves somewhat fleshy; flowers dull purplish-white; fruit white, fleshy.

erect, 1 m. tall.

prostrate; flowers white.

shrub, m. tall; flowers purple.

shrub 0.5 m. tall, spreading, flowers dull purplish, fruit white.

✓ Feb. 4<sup>th</sup> <sup>and</sup> Sabana Barley, about 1 mi. S. of As Tew

Area of eroded volcanic soil, erosion apparently started by the existence of a military camp. The bedrock is a porphyry or tuff, white inclusions in a gray matrix, that is ~~weathered~~ to a clay, even though preserving its structure. The gullies have cut well down into this. The general vegetation where erosion is not apparent is *Miscanthus*. In the eroded areas and the

soil pH red surface soil recently burned over 5.6 same material 15 cm. deeper 5.0 weathered parent rock 5.0

surrounding *Miscanthus* are many of the normal ~~sabana~~ ~~plants~~ - *Miscanthus*, *Cheilanthes*, *Cupularia*, *Aphrionurus*, *Gleichenia*, *Hypopodium cernuum*, *Geniostoma*, *Heteropogon*, etc. also a number of strand plants such as *Scorpiola*, *Ipomoea*, *Ipomoea*, *Desmodium*, ~~tipidium~~, *Umbellatum*, etc.

71305 *Cantharospermum*  
common on weedy spots  
and roadsides.

✓ 06 *Hypopodium cernuum* L.  
occasional in gullies,  
with *Gleichenia*

✓ 07 *Wikstroemia elliptica*  
rare

✓ 08 *Gleichenia linearis*  
common, colonizing  
extensive areas on  
eroded soil.

gray pubescent vine;  
flowers yellow.

slender sterile shrub  
1 m. tall.

rhizomes prostrate.  
branches erect.

31309 *Myrsinella benningseviana*  
rare, only one small plant  
seen in eroded place.

10 *Sphenomeles*  
common on bare eroded  
subsoil and rock

11 ~~*Scaevola frutescens* (Mill.) Kr.~~  
~~occasional~~

11 *Nephrolepis hirsutula*  
in bottoms of erosion  
gullies with strand plants

12 *Scaevola frutescens* (Mill.) Kr.  
occasional on eroded area

13 *Desmodium umbellatum*  
occasional on eroded  
ground

14 *Cerbera*  
occasional on eroded ground

15 *Dodonaea viscosa*  
occasional on eroded  
slopes and in gullies

16 *Cantharospermum*  
on eroded slope

17 *Euphorbia*  
on eroded ridge and ~~dry~~  
~~Miscanthus~~

18 *Glossogyne tenuifolia*  
on eroded ridge

19 *Emilia sonchifolia*  
on eroded slope

20 *Heteropogon contortus*  
common in areas that  
are not seriously eroded

flowers white.

tufts and small hummocks

erect.

rounded spreading  
shrub 1.5 m. tall; flowers  
white; fruit white, fleshy.

shrub 1 m. tall, only a  
few old dried fruits  
still persisting.

shrub with milky  
juice.

shrub 2 m. tall, fruit  
pale greenish; flowers  
green.

prostrate; unusually  
hairy.

erect, flowers white.

flowers purple.

74 1950 Island

1) 2: *Genistaea minanthum* var. *glabra*  
var. - a coded a sea  
3) 2) *W Cheilanthes tenuipolpis*  
occasional, especially  
among *Miscanthus*, but  
also (small plant) on bar and dry

75

shrub 1 m. tall, flowers  
white.  
nest

Feb. 4 - Unai Laulau Kulan  
low coral bluffs along  
shore above beach,  
mostly covered by *Pimphis*  
and *Bibbia*.

3) 2) *Hedysotis albido-punctata* (Mey.)  
in crevices and cavities  
on bare cliff.

From here it is obvious  
that along this coast a  
great deal of salt spray  
flows far inland.

Vegetation on cliffs shows  
extreme "wind-shear" effect.  
In late afternoon sun  
the actual spray is

on north east side of Kauai Peninsula

3 m.

leaves varying in fleshyess  
to very thick; flowers  
white, limb patent; fruit  
tending to be fleshy

very visible, blowing  
ups over cliffs and inland  
from north east.

Feb. 5 Chalan Kanoa

31324 *Taeniophyllum*  
epiphytic on *Artocarpus*

31324a *Emilia* <sup>on and around bases</sup> <sub>on the foliage</sub> <sup>back of beach</sup>

Feb. 5 north of Tanapag. - on Tanapag Village,

5 25 *Panicum purpurascens*  
dominant in low place

Feb. 5 s. of Puntan Magbi.  
n.n. cont  
secondary vegetation  
mostly weeds and *Cyperus*

5 26 *Trema*  
occasional

5 27 *Indigofera tinctoria* L.

Feb. 5 - Marpi Point (Puntan  
low vegetation on limestone  
flat at top of cliffs 30m.  
large patches of low  
*Scaevola* *frutescens*,  
and *Paspalum vaginatum*  
and *Phyllanthus*.

5 28 *Fridax procumbens*  
bare coral roadside

5 29 *Clitorea ternata*  
common in weed patches

5 30 5 *Myoporum boninense* Koidz.  
on rough coral

5 31 *Abutilon indicum*  
asiaticum var. *albescens*  
common on rough coral

5 32 *Fedystis albidos-punctata* (Nees.) Forsb.

roots dull green,  
fleshy; buds green.

Feb. 5 north of Tanapag Village,  
tangled mass  
2 m. deep.

Feb. 5  
B&W. roll B

guanoets flattened  
by blast of ammonium  
explosion

low wide-spreading  
rounded tree, stem 2 m.  
thick, flowers reddish.

Feb. 5 (continued)  
Views of Marpi Cliffs  
from several places

B&W Roll B + C

Kod. Roll 4

also unexploded shell  
with *Passiflora foetida* in bg.

May - yellowish white  
tangled vine, <sup>stapelia</sup> ~~coconut~~  
intense blue with  
terminal yellow claw  
prostrate, leaves  
fleshy; flowers white  
with honey like odor, fruit magenta  
low shrub, flowers orange  
leaves fleshy, fls. white.

71333 *Cochlosperma torresianum* Gaud.  
 1 rare on edge of cliff  
 2 741 *Phyllanthus*  
 locally abundant  
 on rough limestone

sterile.  
 leaves sub-glossy,  
 flowers white.

3597 *Trema*

common tree

Feb. 5 - e. of Marpa cliffs  
 open weed patches and  
 cane fields, roadside  
 with *Passiflora quadrangularis*  
 eroded place in red  
 earth with great  
 quantities of dead *Achatina*  
 shells. Deep red granular-  
 gypsiferous soil, testing  
 about 6.5. Few live snails seen.

tree 4 m. tall, leaves  
 silvery beneath, fruit green

Pan roll C

Kod. roll 4

pictures of dead snail  
 shells in gullies of red  
 eroded soil.

also of vegetation above  
 showing patches of  
*Acacia confusa* in  
 forest.

Feb. 5 - Fanuhulugan Bay  
 terrace at top with  
 thickets of Albizia and  
 Leucaena, patches of  
 sorghum, fields of sugar cane  
 Thickets open beneath.  
 cliffs with forests of  
 Cordia, Barringtonia, Phoenix  
 Cynometra, Hernandia,  
 Erythrina, etc. tangled  
 with Alyxia, Abrus, etc.  
 Open places with Pemphis  
 and Bikkia.

5/31/36

amaranthus

common at foot of  
 cliffs at top of beach

77

Alyxia torresiana

common in woods on cliff

38

Cornus chinensis  
 local in thickets at  
 top of cliff around ruined  
 building

39

Blechnum brownii

common in thicket

40

Malvastrum

one plant seen in thicket

Feb. 5 Puntar Fanuhulugan  
 s. of Fanuhulugan Bay  
 cliffs of gray tuff,

41 *Pithecellobium tenuipolia*  
 common on bare cliffs

42 *Cassia*  
 common at edge of thicket

strand forest at base  
 on talus and top of gravel  
 beach of old trees of  
 Hernandia, Thespesia,  
 Pisonia.

open beneath, with  
 Thurea and Ipomoea  
 pes-caprae, these running  
 out onto beach. Ipomoea  
 seedlings coming up  
 abundantly on sand  
 just at top of wave mark.

erect.

vine, fruit black.  
 stem fleshy.

stem erect at tips.  
 erect, fls. orange.

604

Kod roll 4 - views across bay  
 Pan roll C / with island images of Farang  
 also view inland  
 forming a tuff

low shrub or subshrub, fls.  
 yellow, pods green.

Feb. 5 Center of island west of Puerto Fanechulutan

At pass Miscanthus is definitely growing on almost bare limestone. Ferns and other things in shade acacia.

Feb. 6 Anatahan

Looks like a cone that once was much higher but has had the top blown off. Slightly dissected on s.w. slopes, less so further east. Hill + ridges look grassy, sparse forest in ravines and on high peak.

Some wave cutting around shoreline, resulting in truncated ridges and in places a very recent looking sea cliff.

Kod. roll 4 Pan Roll C photos of Passiflora foetida covering red soil on ammonium storage depot. Also of limestone pines, acacia, coffee forest.

2 Xerox copies

PH. 32-105

142-179

2 Xerox copies

mu. 32 - 105

142 - 179

Feb. 5 Center of island west of Punta Faruchulata.

At pass Miscanthus is definitely growing on almost bare limestone. Ferns and other things under acacia.

Feb. 6 Anatahan

Looks like a cone that once was much higher but has had the top blown off. Slightly dissected on s.w. slopes, less so further east. Kim + ridges look grassy, sparse forest in ravines and on high peaks.

Some wave cutting around shoreline, resulting in truncated ridges and in places a very recent looking sea cliff.

Feb. 7 Roll 4 Pan Roll C photos of Passiflora foetida covering red soil on ammunition storage depot. Also of limestone peaks, acacia, conifer forests.

Time ~~10:00~~ ~~10:00~~ ~~10:00~~  
about 10. 10. 10.

Feb. 7 - near Salt Lake  
w. side of island

ash beds, granular  
ash  $\frac{1}{2}$  to 7-7.5

31343 *Hibiscus tiliaceus* L.  
common around edges  
of salt lake, not seen  
to any extent elsewhere

44 *Sphenoclea biflora* (Raulf.) Tagara  
on cut bank in ash

45 *Zoysia tenuifolia*  
abundant locally  
forming a solid cover

46 *Polyscias scutellaria* (Burm.) Fosb.  
planted around old house site

47 *Thevetia peruviana*  
planted around old house site.

48 *Euphorbia hirta* L.  
common weed in road

49 *Phyllanthus niruri* L. <sup>var. amarus</sup> <sub>silvum</sub> Th. det.  
occasional along road

50 *Pennisetum pedicellatum*  
common locally along road

51 *Dactyloctenium aegyptium*  
common weed along road

Feb 7 ash beds of  
isthmu, near Brabu;  
flats, somewhat cut  
by ravines, covered by *Miscanthus*  
52 *Cassia occidentalis* L.  
occasional along road

Pan roll C - views of Pagan  
in early morning  
from ship.

Kod roll 4 - various views of  
volcanoes, also vegetation  
near fresh water lake  
and of lake from Mt. C. F.

spreading low tree

caespitose, leaves tending  
to be leathery.  
forming dense mat.

erect shrub, 2 m. tall,  
leaves very conchoidal.  
small tree, flowers  
yellow.

forming dense tangled  
spreading tufts

flowers yellow

G. L. Webster  
1955

31353 *Eleusine indica* (L.) Gaertn.  
rare weed in ravine

54 *Desmodium triflorum*  
common on bare places

55 *Heteropogon contortus*  
common on bare ash

56 *Crotalaria pallida* Don.  
abundant everywhere

57 *Ipomoea batatas*  
one small colony

Feb. 7 - near salt lake (see p. 84)

58 *Catharanthus roseus*  
common along road,  
spreading from planting  
at camp

59 *Clephantopus mollis*  
common generally on ash

60 *Jatropha gossypifolia* L.  
dominant over large areas

61 *Sida rhombifolia* L.  
common weed

62 *Sida acuta* L.  
common weed

63 *Amaranthus spinosus* L.  
occasional weed

spreading tuft.

prostrate

erect shrub 1-1.5 m. tall,  
flowers yellow with  
brown lines.

formerly a principal crop here.

flowers white

shrub with fleshy  
stems, 1 m. tall, young  
growth purple, hairs  
purple with green  
viscid glands; fls. red.  
said to have been brought  
by Japanese who used the  
oil from the seeds as hair  
oil for women.

erect herb, 1.8 m. tall.

ascending shrub, 0.8 m. long,  
fls. orange.

erect herb 1 m. tall.

31364 *Euphorbia prostrata*  
very common weed in roadbed

✓ 65 *Portulaca oleracea*  
common weed

✓ 66 *Digitaria ciliaris*  
occasional weed in road.

✓ 67 *Crassostis ~~ambigua~~ tenella*  
common weed generally  
on bare soil.

✓ Feb. 7 - flats near landing  
ash soil

✓ 68 *Stachytarpheta ~~racemosa~~ (L.) Vahl*  
only one plant seen

✓ 69 *Emilia sonchifolia*  
occasional here,  
not seen elsewhere on island.

Near the landing and around the bay to where the hills come near to the beach, and across the broad isthmus or depression between the two high parts are extensive flats covered by ash beds. This part constitutes the only extensive agricultural land on the island outside the coconut plantations.

The ash is workable and probably fertile, and is about neutral in

prostrate  
prostrate, bronze green,  
fleshy.  
culms ascending.  
spreading tufts.

flowers blue-lavender.  
leaves gray-green.  
flowers purple.

reaction. It is granular in texture and gray, where fine, almost black. agriculturally the principal difficulty might be water. Any extensive dry period might mean crop failure. A part of the isthmus covered by lava flows.

Feb. 7 - Fresh Water Lake  
lake of brackish water  
inside old crater,  
surrounded by acrostichum  
avescum and casuarina,  
on one side is a flat place  
with forest of *Trema*,  
*Casuarina*, *Psychotria*,  
*Ficus* sp., *Melanolepis*, *Grewia*, *Aglaia*,  
etc. The casuarina trees  
are tallest, but old ones

71370 *Psychotria mariana*  
common tree in second  
story of forest

71 *Trema orientalis* var. *argentea*  
commonest tree on island  
except Casuarina.

72 *Passiflora foetida* var. *hispida*  
abundant, climbing  
over other vegetation

73 *Grewia crenata*  
common in second story of forest

74 *Ananas comosus*  
persisting in open ground  
labor.

75 *Alocasia macrorhiza*  
occasional in wet ground near lake

76 *Colocasia esculenta*  
common locally in wet  
ground east end of lake

are in poor condition.

tree 5 m. tall, ~~ft~~ stipule  
as in *Mapourea* when  
well developed; flowers  
white, salverform, ripe  
fruit red.

small rounded tree  
5 m. tall, ripe fruit dull  
dark reddish.

extensive herbaceous  
vine, flowers white  
with basal half of  
corona segments deep purple,  
fruit orange.

small tree, spreading,  
4 m. tall, fruit green.  
plants sterile reddish,  
pale green in color.

leaves erect, bright green;  
plants 1 m. tall, petioles purple,  
petioles erect, ~~blade~~ blade  
blade, glaucous, pendent,  
dull. plants sterile.

31377 *Psychotria maniana*  
common in under-story

2 78 *Chara seyanica*  
covering lake bottom in 5-8 dm.  
of water.

1 79 *Acrostichum aureum* L.  
continuous belt around lake  
at water level and up to 8 dm.

3 80 ~~Utricularia thyrsiflora~~ *Utricularia portula*  
common in paths in old village

2 81 *Melanolepis multiglandulosa*  
occasional in under-story

1 82 *Premna obtusifolia* R.Br. (obtuse leaves)  
occasional in under-story

2 83 *Operculina umbellata* <sup>ventricosa</sup>  
occasional in woods

3 84 *Ficus tinctoria* Forst. var. <sup>neocaledonica</sup>  
common in woods

2 85 *Polypodium scolopendria*  
local near edge of lake  
~~terrestrial~~

1 86 *Aglaia mariannensis*  
one of commonest trees in forest

4 87 *Cyperus phystachyos*  
abundant locally in wet spot

4 88 *Pteris quadriana* R.Br.  
common on walls and  
bluffs of partially consolidated  
ash or shale.

4 89 *Abus precatarius*  
occasional in forest near lake

shrub 3 m. tall. flowers  
white.

- ill-smelling when  
freshly taken from water.  
clumps, ponds 1-2 m.  
long.

prostrate, purplish.

~~occasional in~~ -  
shrub a small tree,  
racemes pendent, dark brown

shrub 3 m. tall,  
flowers green with large lobes white

- great vine, climbing  
over vegetation; flowers  
white, open at 10:30 a.m.  
center yellow.

tree 6 m. tall; fruit  
orange when mature.

- ponds sweet, sterile.

small tree 3 m. tall.

vine climbing in bushes,  
flowers purplish.

1 90 *Canis papaya*  
occasional in forest

2 91 *Nephrolepis hirsutula*  
common in forest, on ground

3 92 *Ficus prolixa* var. *subcordata*  
common in forest

low <sup>muddy</sup>  
~~peaty~~ soil e. of lake pH 7  
some <sup>old</sup> palm at salt  
end of lake.

4 93 *Thunbergia aquatica*  
in low moist ~~peaty~~ <sup>muddy</sup>  
area at east end of lake

5 94 *Paspalum conjugatum*  
in low moist ~~peaty~~ <sup>muddy</sup> area  
at east end of lake.

## Birds:

Saw about half a dozen ducks that may have been Marianas mallards on the fresh water lake. Another reported from the salt water lake. They looked much as I remember mallards, but rather small and with a bright red face. One pair behaved as though they were nesting. Fairy terns common. Starlings (?) seen in the trees near lake.

tall single stem, flowers cream white (fruit of plant very small)  
fronds and rhizome erect.

large banyan, one half leafless and with green fruit, other half leafy. (one leafy twig from another individual)

prostrate, flowers pale lavender with purple throat.

stems running, with erect branches.

A dark bird with lighter head that flew like a dove, but did not get a good view. About 15 reef herons over the salt water lake, most of them white. One kingfisher.

The snails here have unusually thin shells. Possibly due to lack of limestone.

Feb. 7 - same - on recent lava ~~at~~ east ~~out~~ of caldera mostly covered by *Miscanthus*.

31395 *Hyptis pectinata*  
common locally

96 *Ipomoea pes-caprae*  
rare, on lava just above caldera

97 *Cyperus javanicus*  
edge of lava, in wet soil pocket

98 *Paraphalium obiculare*  
common on lava in soil pocket

99 *Chileanthus tenifolius* (Burm.f.) Sw.  
occasional in crevices on lava

31400 *Vernonia cinerea*  
common

01 *Digitaria ciliaris*  
occasional

02 *Phyllanthus manannensis*  
common locally

Feb. 8 - Mt. Charlen ~~spatter~~, spatter cone just east of caldera

03 rough lava and *Ipomoea pes-caprae*

03 ~~Fls. on wall of deep~~  
crevass, stranded

04 *Glossyga tenifolia*  
local on lava slope

05 *Chileanthus tenifolius* (Burm.f.) Sw.  
around hot-air vent

06 *Nephrolepis insulata*  
common on outer slopes of cone, in crevices

soil pockets on this lava with fine black soil pH 6.5

erect herb 1.5 m. tall, aromatic, prostrate, flowers purple.

erect

fls. purple.

one plant shrubby, others almost acaulescent.

Kod. roll 5 views of crater, of Pan. roll 5 cone, of caldera, of black lava flow, etc. of slopes and cliffs around caldera, with *Miscanthus*, *Canna*, *grindelia*, etc.

rays yellow

31407 *Ipheionomeris biflora* (Kaulf.) Tagawa  
rare on crater rim

✓ 08 *Glaciaria linearis*  
one or two tiny colonies inside  
rim of crater, plants all young.

✓ 09 *Parallia solida*  
on fresh lava flow  
just east, one of first colonists

✓ 10 *Nephrolepis minutula*  
on fresh lava flow just east.  
and first colonists

✓ 11 *Casuarina equisetifolia* L.  
on fresh lava flow, just  
east, one of first colonists.

✓ 12 *Chrysopogon aciculatus*  
marsh bed, to east

✓ 13 *Ageratum conyzoides*  
common locally on lower slopes

✓ 14 *Melastoma malabathrum*  
rare, one plant seen just  
below rim.

✓ 15 *Fimbristylis minensis* Nagata  
~~urakasiana~~ Ruta.  
common on crater rim

Mt. Charles ~~Charlton~~ is a small  
dormant cone of scoria east  
of the fresh water lake, in the  
large caldera occupied  
by this lake. It is of material  
of various sizes, covered by  
a smooth red hardened crust.  
Has a small crater filled  
with vegetation. A lava flow  
of semi-pahoehoe issued from

gronds erect

forming mat;  
scapes erect  
erect, bls

small shrub, flowers  
white.

tufts.

its base and flowed to  
the lake. This is now covered  
by sparse vegetation, mainly  
*Miscanthus*. *Casuarina*  
covers the slopes of the cone. Various  
vents on the sides, base,  
and rim give forth hot gases  
but no odor. Between the  
flow and cone base is a deep  
crevasse.

100 1950 Pagan

Feb. 7 Pass bet. the two lakes  
on walls of compact ash.  
p. H. 7-7.5, partly shaded.

11416 Dasyptasis Thelypteris unita  
common

17 Dasyptasis Thelypteris torresiana  
occasional

Feb. 8 Lava flow at landing

18 Wedelia bifida v. argentea  
local

clad. from. p. 79. — From the  
base of Mt. Pagan, directly  
opposite this, has come  
recently, a flow of intensely  
black aa lava. It has  
only a few plants - Casuarina,  
Nephrolepis & Davallia n. sp.

Pagan is a double complex of  
volcanic outlets with a  
main high volcano on each  
end. On the west end, around  
Mt. Pagan, are a series of  
secondary vents of various  
ages, including an old caldera  
occupied, in its lowest part,  
by the fresh water lake.

The sides of the main  
cones are steep and of loose  
material. The top parts  
are almost bare, with a  
few Casuarina (?) trees struggling

Pan roll 0 - view of  
east peak of Pagan late  
afternoon.

101

rhizome creeping.

sprawling tangled herb,  
flowers yellow.

on the slopes.

On the lava and ash the main  
colonist is Micranthus floridulus,  
but Ficus (2-36.) & Morinda  
citrifolia are frequent. Heteropogon  
forms occasional patches. Trema  
is also here and there, as in  
the small crater of Mt. ~~Charles~~ Charles.

102 1950 Agriyan

Feb. 8 - Village - many  
plants in cultivation  
around village, also  
many weeds.

31419 *Triumfetta*  
common in coconut plantation

20 *Elephantopus mollis*  
common in coconut plantation

21 *Lida rhombifolia*  
common weed in coconut plantation

22 *Ocimum sanctum L.*  
commonly cultivated

23 *Plectranthus brownii*  
common weed in coconut plantation

24 *Passiflora foetida s. bipida*  
occasional weed in plantation

25 *Theretra peruviana*  
cultivated around houses

26 *Premna corymbosa*  
cultivated around houses

27 *Acacia farnesiana*  
cultivated

28 *Scævola* ~~fœtida~~ *truncata*  
cultivated

29 *Sporomoea pes-caprae*  
dominant beach plant

30 *Vernonia cinerea*  
common weed everywhere

31 *Glechoma indica (L.) Gaertn.*  
common weed in village

32 *Amaranthus spinosus*  
common weed

Feb. 10 5 views  
from roll 0 of island  
from ship

103

coconuts, papaya, banana, tobacco  
lime, mango, *Terminalia c.*  
*Acacia farnesiana*, *Prema* etc.

erect herb, 1 m. tall,  
- flowers yellow.

erect, flowers white.

erect herb 0.8 m. tall.

erect bushy herb 0.6 m.  
tall bracts purple,  
corolla white.

spreading herb.

herbaceous vine

shrub 2 m. tall; flowers  
yellow.

shrub 3 m. tall, flowers  
greenish, ripe fruit black.

single large bush,  
largely defoliated.

shrub 2 m. tall,  
flowers white

luxuriant vine, spreading  
over beach and climbing low cliffs,  
flower purple.

erect, flowers purple

~~grass~~ spreading tufts.

erect herb 0.8 m. tall

104 1950 Agriyan - Farallon de Pajaros

31432 *Phyllanthus amarus* Schum. & Th.  
common weed in village

31434 *Lyredella modiflora*  
common weed in village  
and plantation.

31435 *Lambertia canadensis*  
cultivated in village

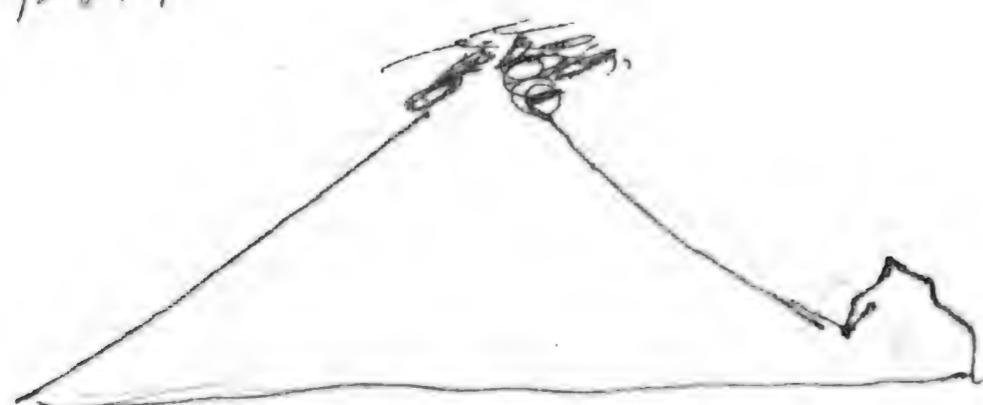
31436 *Malvastrum coronandianum*  
occasional in village

Webster  
1955

105

erect  
erect, flowers yellow.  
shrub 2 m. tall  
flowers orange-yellow.

Feb. 9



Farallon de Pajaros from N.W.  
7 mi. dist.

no detail could be made  
out but summit appears  
to be capped with steam.

Feb. 10



Woody vegetation seems to cover all parts that are  
not sand or rock. Grasses on slopes  
and on talus, and on some sandy ridges. Light green vegetation,  
possibly *Acacia* or *Acacia*, prevails on lower slopes.

Minami Iwo Jima from a little south of east.

abrupt cone of ~~very~~ light  
colored (and gray)<sup>and gray</sup> material. Intermittently  
covered by an umbrella-shaped  
cloud (or smoke?) (prob. not smoke)

Several large break-offs  
cliffs a worn basal part.  
above them. Large areas of  
woolly vegetation. Apparently  
~~that~~ grass on all parts  
not covered by woolly veg.  
e.g. some of the more abrupt  
cliffs and talus filled vertical  
ravines. Break-off exposures  
show dark gray rock, bedded in  
places. Loose material is a  
light pinkish tan color or gray

thin woody veg. clear to summit  
of pass may well be *Miscanthus*.  
Break-off cliffs abundantly  
cut by thin vertical dikes.

Woodsy reg. looks fairly diverse. A number of trees orange yellow, as though dead with full foliage. Scattered here and there.

24619

147 2013

asocles I with  
alt. on a base.

Chart says section - 10 loans in 1919 but this is incorrect. Says  
Salford loans came from sea to market some  
does not indicate any evidence of - went to - as little  
amount - and evidence of little

Kod. roll 5 end. roll 6.  
Pan. roll D

On ~~south~~<sup>south</sup> side is a sandy  
sand beach and at  
west one place where  
the cliff could be climbed.  
On a ~~south~~<sup>south</sup> side, landing feasible in good  
weather, esp. with rubber boat.  
~~south~~<sup>south</sup> side is more  
steep, with  
small trees, with  
and steep boulders, beach,  
cliffs around back.

Hanging valleys in  
almost vertical ravine  
wooded. Cliffs, a few  
feet on this side could  
easily be climbed.  
Northwest  
wall could be climbed  
unlimbered, 45° slope  
above well wooded.

## Book of Job 3:1

long down with rocks up  
and down.

2 places on a. w. cone, can be climbed, giving access to a difficult 'canyon' east of which might give access to summit, and west of upper slopes.

several small peaks on  
s. w. side, high up.  
S. e. corner has a comb-like ridge  
s. side cirque-like, with  
great talus slope running  
1/3 way up, and into gullies.

middle section. huge bare  
cliffs. little woody vegetation  
on this side, except a patch on  
extreme left, and a few patches  
elsewhere.



possible access to water  
slopes on n.e. corner  
From n.e. trees can be  
seen on summit, fair  
sized ones. No evidence  
of a crater

Apparently if world  
be possible to walk a round  
the island on the beach  
except for the south-east  
corner, where an old drift  
is on the rocks. Perhaps  
in case of rough weather  
it would be difficult  
anywhere on beach.

No good camp sites  
evident.



Found Black & white albatross  
seen on an island.  
Many red-tailed tropic birds.

On island a small bird  
about size of a sparrow,  
drifting, sometimes almost  
disappearing, then returning  
but always maintaining  
its shape.



No evidence of  
fresh water seen,  
but doubtless may  
be seeps and sea-level  
springs.

110 1950 Iwo Jima

Feb. 10



Surabachi is a mopped mass of bedded material with cliffs and talus. Little vegetation except on talus and a few patches above the cliffs on south side. No trees but some low brush.

Flat part seems grassy from a distance. Some wood, e.g. at base of Surabachi toward flat side.

West side of Surabachi has almost no vegetation, i.e. cliffs + talus, stained with sulfur.

Large crater on w. side, in much lower to west.

On w. side of flat part are a few scattered trees, mostly grass.

Volcanic material here mainly light colored, one or two outcrops of darker.

Rod. coll. 6.  
several views  
from s. & w.  
Per. coll. D & E  
several views  
from s.  
panoramic from west.

111



w. side Surabachi

North end seems to have several terraces, e.g. when viewed from west.



Also some rather high cliffs. These seem to be traces of at least 7 or 8 terraces.

112 1950 Kita Iwo Jima 2000 ft.

Feb. 10



rot. rock  
lava & E.

View from south

Made up of bedded dark red-brown and red-gray material, probably mostly tuff.

Break-off cliffs and talus slopes common. Age of talus and cliffs may be estimated by amount of vegetation developed on them.

Several conspicuous very steep hanging valleys on west side. Woody vegetation very well developed in these and on all <sup>upper</sup> slopes visible. Steeper places and some talus slopes are covered but they not prominent. Grass and some green woody (?) veg. on ledges on cliffs. B. bad-leaved veg. apparently develops almost as soon as grass on basal talus, later these slopes become wooded.

113

for contrast



View from west

In general the island is well wooded.

North slope has a long semi-acute ridge trending inland cliff.

Basal cliff face around north, and west and south sides. talus at base, rocky beach <sup>the sides</sup> all around, on n.w. side ~~the~~ deep valley cut almost to base-level. Various places seem climbable.

Same sort of umbrella-shaped cloud as on Manami but darker and larger, upper fourth <sup>island</sup> not visible.

On n.e. side is a gently sloping shelf with steeper slopes above it. Pre-war village could have been here.

114 1950 Bonin Is.

Roll 6 a few of  
Roll 6 sunny

Chloris firma

115

Feb. 11 - north side of Mt.

back of C. maura 2000 ft.  
bushes, and windbreaks  
and openings on slopes.31437 *Elaeagnus*

several plants on bushy slope

38 *Rubus*

local on bushy slope by trail

39 *Althaea?*

local in small ravines

6 40 *Casuarina equisetifolia*

common on slopes, forming thickets

41 *Acacia confusa* Max.

occasional in bushes

42 *Pinus*

common in patches and rows

2 43 *Pteris*occasional in shade of  
great boulders2 44 *Dryopteris*

occasional in shade of great boulders

5 45 *Boehmeria* q

common in bushy patches

46 *Lambucus*rare on ~~so~~ hill covered  
by great boulders7 47 *Trema orientalis* var. *argentea*

common everywhere, this plant on rocky hilltop.

Roll 6 a few of  
Roll 6 sunny

Chloris firma

115

clay soil from decomposed  
volcanic tuff (and a green  
rock).ravaged  
stems 2 m. tall, fruit  
turning orange.low semi-creeping shrub;  
flowers large, white.  
rhizome erect, short,  
of wood 2 m. to 1.5 m. long;  
two extra pieces with  
each specimen from different  
plants.small tree 6 m. tall;  
said to ~~be~~ have been imported  
by Japanese and called "American pine".  
small tree 5 m. tall, sterile.tree 15 m. tall, 3 dm. thick.  
cones on ground beneath. said  
to have been brought by Japanese  
and called "Okinawa pine".

fronds arching.

shrub 1.5 m. tall, fruit  
old and what lived.  
stems 1.5 m. tall,  
mostly dead.young tree 4 m. tall, sterile.  
(all seen sterile)

144 58 *Ophiopogon compositus*  
5 between great boulders hilltop

5 49 *Pouteria*  
common on hilltop of great boulders

1 50 *Graphalium pungens*  
in tiny soil pockets on top  
of great boulders

3 51 *Ardisia*  
common tree on hilltop  
of great boulders

5 52 *Pitcairnia revoluta*  
one small colony on top  
of great boulders

3 53 *Ardisia* few  
Very common, especially  
on rocky places

2 54 *Cinnamomum* <sup>zeylanicum</sup> <sub>canescens</sub> <sup>Sieb. det.</sup>  
common in thickets, this  
one on rocky hilltop

6 55 *Cochlosia*  
occasional on rocky hilltop

5 56 *Ardisia sieboldii?* det. Walther  
common on rocky hilltop

4 57 *Piper*  
common on rocky hilltop

5 58 *Celtis*  
common tree on rocky hilltop

2 59 *Mucuna gigantea*  
common on rocky hilltop

1 60 *Calophyllum inophyllum*  
common, planted for windbreaks

stems along great fissures,  
ascending at ripes.

tree 4 m. tall, sap milky,  
leaves dull green, opp, in whorls.

tree 4 m. tall, fruiting  
heavily, fruit green.

plants erect.

woody vine, extensively  
twining, sap milky; fruit red.

tree 5 m. tall, aromatic,  
in bud only, rarely so.

tree 6 m. tall, spreading,  
sap milky, fruit yellow  
and fleshy when ripe, in pairs.

tree 3 m. tall, fruit green.

vine, rooting at nodes,  
flower spikes extremely young.

tree 6 m. tall, leaves  
grayer beneath, fruit green.

woody vine climbing in  
trees, flower clusters on old  
wood on lower leafless part of vine,  
flowers pale green.

tree 7 m. tall, densely leafy.  
"tamanu".

31461  
7 occasional on bushy slopes  
62 *figuatum*  
occasional in old windbreak

Feb. 11 - a slope back of Comma,  
a round bombed out Japanese  
installations. 10 m.

4 63 *Lathyrus niger* L.  
in a crevice, in broken concrete

5 64 *forsskaea japonica*  
common in crevices, in  
broken concrete

7 65 *Cyperus alternifolius*  
common generally

5 66 *Chloris radiata*  
common in roadway

5 67 *Raphisolepis*  
on small bushy hill, common

5 68 *Hibiscus tiliaceus* var.  
common on small bushy  
hill

69 *Ficus*  
common generally in thickets

Acc. Wilson saying the  
Japanese cleared the  
seaward slopes thoroughly  
and put them under cultivation.  
Then they found the wind was too  
strong so they had to plant windbreaks,  
for which they used the native *Calophyllum*

shrub 1.5 m. tall, leaves  
glaucous beneath; sterile.  
shrub 1.5 m. tall; fruit  
purple on one side.

flowers white.  
flowers yellow.

densely caespitose

shrub 2.5 m. tall, leaves  
leathery somewhat  
pubescent-reticulate veined.  
shrub 3 m. tall, leaves  
glaucous beneath.

Banyan tree 5 m. tall,  
spreading, aerial roots  
numerous, figs turning purplish.

This does not thrive inland  
where there is no salt spray.  
*Rhoes discolor* used in making  
medicine by Japanese. Used for  
"gripes" (stomach cramps?) and for  
fever in children. Evidently used on  
a large scale, as they tried to get the Bonin

Feb. 12 - slopes of mountain back of 6 year old dense mixed forest, in places rather tall and with little undergrowth, in other places situated and bushy, or even open and dominated by sedges. Palms very common.

31470

common, scattered over whole slope

"cabbage palm", bud eaten. Leaves used for thatch in old days. A roof of them would last 5-10 years.

71 *Wikstroemia*  
occasional in open spots in forest

72 *...*  
are in sparse places in forest

73 *...*  
rare in sparse places in forest

74 *Ficus*  
rare in undergrowth in bushy places

75 *Hibiscus*  
common in more scrubby forest.

Roll 6  
Roll E a few  
shots of  
vegetation

This area said by Wilson to vary to have been maintained as a preserve by the Japanese governor, with cutting only rarely allowed and then strictly limited.

75-150m.

slender clean trunk 6 m. tall, many leaves, fruit green (endosperm hard when ripe); ~~petioles~~ without prickles on smooth trees, but quite prickly when young. (Two leaves with prickly petioles taken from trees - with trunk 1 and 2 m. tall). shrub 3.5 m. tall, sterile. (Others seen 5 m. tall).

shrub 2 m. tall, flowers white.

shrub 1.5 m. tall, fruit immature. (broken shrub, only one seen with fruit, to go with #31472) shrub 1.5 m. tall, figs immature.

tree to 7 m. tall, one flower picked up on ground beneath, yellow turning red, deep ~~maroon~~ center and stigmas, yellow stamens

31476 *Grewia*  
6 occasional in open places

3 77 *Eugenia*  
common in and around openings.

4 78 *Smilax*  
common around openings

3 79 *Hibiscus*  
edge of openings, common

3 80 *Eugenia*  
common in and around openings

2 81 *Hibiscus*  
in openings

5 82 *Raphiolepis* ?  
common in forest, this plant in brushy second growth

3 83 *Pandanus* *P. boninensis* Warb. det. SB John 1968  
common, this plant in opening

6 84 *Carex*  
common on bare or eroded spots and disturbed places in forest

5 85 *Raphiolepis* ?  
common in forest

5 86 *Scirpus*  
common in forest

1 887 *Schinus terebinthifolius*  
around old fox hole, probably planted

dense erect clumps, inflorescences black.

tree 7 m. tall, fruit rare, reddish black, glossy, tangled vine, spinesless, leaves glaucous, sterile, small, rounded tree 4 m. tall.

shrub 3 m. tall, fruit reddish black, glossy.

young plant, sterile, shrub 2 m. tall.

shrub 3 m. tall (others much larger); fruit black.

1 (in Bish) tree 5 m. tall, fruit green.

dense tufts, spikes arching.

shrub 2.5 m. tall, others seen larger; flowers ~~pink~~ pinkish white.

small tree 4 m. tall, (others seen much larger) fruits erect.

sterile shrub 2 m. tall, strong odor when broken.

7 same - low ~~scrub~~  
ridge ~~surrounded by~~  
mountain side.

31488 Cyathium  
common on ridge and  
lava in shade

89 Andropogon  
common on top of ridge

40 Cyperus  
common on top of ridge

91 Fimbristylis  
common on top of ridge

92 Juncus  
common, forming  
tangles on side of ridge

93 ~~Stromelias~~ *anthyllidifolia* Lindl.  
on top of ridge

The flora of the Bonin Is. is one of the most difficult I have seen from the point of view of knowing whether the plants are native or not. Many of relationships are with eastern Asia. And it is from there that most of the introduced species were brought by the Japanese. For example, *Cassia* may be found almost anywhere except in dense primary forest. Bamboo's of several kinds are very widely

common on ridge.

small clumps, culms  
up to 1 meter.  
up to 1 meter high.

wings; flowers white,  
star-like shape, very fragrant.

prostrate shrub,  
flowers white, fragrant.

dispersed and aggressive.  
Camphor may be found here and there. Citrus also is much at home, and papaya. All of these are a part of the vegetation, yet all were introduced. *Ficus nitida* (?) and - is very common and common. It was brought by the Japanese. It is called "small leaved gum" while *F. macrophylla* is called "large leaved gum". *Persea* glabra was brought by the Japanese after they started their fortification.

Feb. 13 - ~~bay~~ Bay shore  
north of O mura  
Thickets around old building sites

31494 *Hibiscus tiliaceus*  
common, forming thickets,  
occasional, only seen near  
bay shore.

Feb. 13 - Mts. around old  
radio station east of  
Yankee town 1000 ft. m.  
pebbles grassy and crooked,  
seaward slopes brushy  
or grassy, the shrubs more  
clumped the more the exposure,  
forests in ravine, and

95 *Hippolytum*  
very common in disturbed  
open places, mostly  
fruiting at this season.  
this specimen from old radio site.

96 *Bidens pilosa* L. var.  
common in roadside

97 *Ficus*  
occasional in draw of  
forest on ridge.

98 *Psidium cattleianum*  
one plant seen beside road

99 *Cyathea*  
few plants scattered in  
tropical forest on steep slope

small thicket forming tree,  
flower clear yellow with part  
of petal exposed in bud red,  
center maroon stigmas maroon.  
"han" inner bark used for  
coding in old days.

protected slopes. The  
composition much  
the same in the  
brush, scrub forest.  
Roll 6 and Roll 7 first fls. hairy  
Roll E and Roll 1 beginning on n.  
side, some vegetation.

forming dense ground  
cover, spreading by long  
slender stolons, up to  
several m. long; leaves, cutting  
if not handled carefully,  
acute, rays of flowers white,  
rather conspicuous.  
bushy shrub 2.5 m. tall.

shrub 1 m. tall; fruit  
immature.

trunk 1.5 m. tall, fronds  $\frac{2}{3}$  m. long,  
scaly at extreme base, stipe 1 m. L,  
thick at base. sp. ind. stipe, 2 basal  
pinnae, one central pinna and tip.

31500 *Hedysotis*  
grassy exposed ridge over  
ocean, occasional

01 *Hedysotis*  
same

02 *Hedysotis*  
same

03 *Ligustrum*  
common in scrub forest

04 *Sphenomeris chinensis* sp. *biflora* (Kaulf.) Totani &  
common in bare earth of road cut Ohba

05 *Hibiscus*  
common in scrub forest

small erect, branching shrub  
1 m. tall, footed when pubescent,  
broken, leaves light green;  
calyx in fruit enlarged.

same

same

shrub 2 m. tall; berries  
purple-black.

tufts, leaves somewhat  
leathery.

small tree 4 m. tall,  
flowers clear light yellow,  
with turning red with  
age (perhaps second day), with  
maroon center and stigmas.  
"mountain han"

Feb. 17 - Canyon of "Yankeetown"  
Walls covered by thick brushy  
scrub.

06 *Saponaria*  
occasional along roadside

07 *Korthalsella*  
in scrub forest, parasitic (\*31486)  
prob. juvenile *P. boninensis* Warb. det. St John 1968

08 *Pandanus*  
common in forest at all altitudes

09 *Smilax*  
occasional in scrub

stems reddish below  
flowers white, star-shaped.

joints flattened, plane of  
each branch perpendicular to  
that of parent branch.

tangled vine, fruit yellowish,  
almost globous.

31510 *Polystichum*  
common on sides of ravines

3 11 *Nephrolepis cordifolia*  
common on forest floor on  
sides of shallow gully

4 12 *Salacia?*  
occasional in bushy forest

3 13 *Wikstroemia*  
rare in edge of forest in ravine

1 14 *Selaginella*  
one tiny colony on wall of ravine

8 15 *Korthalsella*  
abundant on *figuatum*  
in woods on steep slope; branches  
of host dying where heavily infested.

8 16 *Smilax*  
occasional in bush along  
road

from p. 125 Now it forms dense pure  
stands in many places, even  
in remote areas. Guava  
is found here and there  
but does not seem very  
aggressive. *Eulalia japonica*(?)  
is very widespread in  
open places, is really the  
dominant grass on ridges,  
peaks, etc., but is very  
difficult to know if native.  
It forms a thick but rather  
loose mat. Conspicuous

of shade according to anchorage,  
glossy; plant tuberous.  
- shrub 2 m. tall; f. buds  
only.  
- shrub 2 m. tall.  
- prostrate.  
jointed flattened, plane of  
perpendicular to that of parent  
branch.  
- springy vine forming  
tangle; young leaves  
glaucous, flowers yellowish  
green.

is the abundance of *Bryophyllum*  
*calycinum* on eroded rocky  
peaks and ridges. It is  
deep orange-red, abundantly  
flowering. Old sugar  
fields still persist with  
cane growing and flowering.  
Mostly on slopes up to  
45°. Now show some  
drought symptoms.

Only running water seen  
on e. side of bay, two small streams  
with a very small flow from  
pool to pool. Got big one above dam. (see p. 138)

14. 11th. east of bay.  
above reservoir  
thick forest on steep slopes  
and ridges, of various species  
mostly on side toward bay  
ridges and banks on sides  
and bay, dominated by  
*Ptychosperma calycinum*. 175 m.  
One isolated spot with *Acacia* etc.

31517 *Dodonaea viscosa* L.  
one bush on open eroded ridge

18 *Cladium*  
rare on open ridges and slope

19 *Brachythecium orientale*  
one small colony seen on  
eroded place

10 *Stellaria*  
abundant on eroded spot  
on high ridge

21 *Pteridium aquilinum* (L.) Kuhn  
one ~~isolated~~ colony seen  
in opening in forest on high ridge

22 *Psilotum nudum* (L.) Giseb.  
small colony on rotten rock  
in forest

23 *Scacrola frutescens* (Mill.) Krause  
high open ridge, seen almost  
everywhere on island, up to  
mountain tops, except in forests.

24 *Raphiolepis*  
common in forests everywhere

*Fragaria* seen, but not  
collected as it was distant.  
but found in the occasional  
patches, one bunch seen on top

Roll 8) a few shots

small rounded bush 1 m. tall.  
red achenes hanging by  
threads, small spreading tuft.  
rhizome thick, erect.

rosettes, curving when dry.

most plant, dead,  
only two green  
fronds seen.

shrub 2 m. tall, spreading,  
fruiting inflorescence dry;  
only one plant on island  
seen in flower, most slender  
or with dry fruit).

shrub 2 m. tall, fls.  
pinkish white, fruit  
pyriform.

7/15 205

5 one bush seen in brush on ridge

Feb 14. - slopes and ridges  
above La-ge-bay on east side  
of main bay

steep brushy broken wooded ridges

7 26 *Juniperus*  
occasional in brushy places on ridge1 27 *Juniperus*  
same5 28 *Juniperus*  
same3 29 *Pittosporum*  
common generally in woods5 30 *Elaeagnus*  
common generally, especially  
in brushy places.5 31 *Cinnamomum camphora*  
<sup>local</sup> occasional in ravine5 32 *Cinnamomum doederleinii* <sup>det. Kosterm.</sup>  
common everywhere in woods2 33 *Pouteria*  
common everywhere, especially  
on ridgesrounded densely branched  
bush. fruits reddish green.Roll 7 to end Roll 8 beginning  
Roll E to end scenery and  
vegetation, mts. + coastal places.♂ small tree 4 m. tall - with  
dead top, pendent tips. "spruce"  
♂ small tree, 3 m. tall, small  
branchlets, pendent "spruce"  
small tree 4 m. tall, branchlets,  
pendent "spruce", wood <sup>said</sup> to  
highly inflammable.tree 5 m. tall, leaves  
with undulate margins.All plants seen sterile except  
this one which had 3 dry fruits.- a small shrub, branches  
tending to be elongate with  
reflexed branchlets; fruitsplenty orange red, very aromatic.  
tree 8 m. tall, leaves glaucous  
beneath, camphor odor when  
broken; said to have been introduced by  
Japanese. sterile.- a small tree 4 m. tall, odor of  
- sa-sa-fa-sa when broken.  
"sa-sa-fa-sa" used for medicinal tea  
in old days.tree 6 m. tall, fruit 9 dm.  
very rare.

31534  
1 common vine everywhere in woods  
and on open ridge.

2 35 *Andira*  
common in woods

3 36 *Liquetum*  
common generally, this sp.  
in open bushy places on ridge

3 37 *Fimbristylis*  
common on open wooded ridges

3 38 *Carex*  
common on open wooded ridges

3 39 *Wilestroemia*  
common on bushy ridge  
(with #31540)

5 40 *Wilestroemia*  
common on bushy ridge.  
(with #31539)

4 41 *Malibus thunbergii* S. & Z.  
common on ridges and in  
woods.

1 42 *Mangifera indica*  
common in ravines and lower slopes

3 43 *Genistoma*  
seen on bushy ridge

8 44 *Photinia*  
very local on bushy wooded ridge

1 { 45  
1 { 46  
1 { 47 common in woods on ridge  
seeds only, perched up under a  
tree with quite thorny petioles.  
(see #31540)

rough vine, sub milby;  
very rarely fruiting.

small tree, fruits turning red.

shrub 1 m. tall (others  
seen as small trees); fruit  
dark purple.

carpitation leaves stiffening.  
Carpitation.

shrub 1 m. tall, berries  
red. (perhaps f. may  
form of #31540)

tree 4 m. tall (perhaps  
is old form of #31537)

shrub 2 m. tall (others  
seen as small trees); leaves  
glaucous beneath, flowers  
pale green (most plants sterile).  
dense tree 8 m. tall; flowers  
pale greenish.

shrub 2 m. tall, flowers  
shrub 3 m. tall; fruit  
scarlet

palm with trunks closely  
scarcened (1-3 cm. apart) becoming  
smooth and longitudinally fissured.  
Thorniness of petioles extremely  
variable from tree to tree, even  
slightly on same tree. "cabbage palm"

71943

1 damp woods (for data see p. 132)

1 49 *Blachystegia* - *triaxialis*  
lower slopes along road,  
in shade but open ground1 50 *Phyllanthus urinaria* <sup>debilis</sup> Klein <sup>\*Willd.</sup> Det. B. V. Webster, 1955  
has a short a long road1 51 *Calathea* *japonica*  
abundant in open places  
everywhere, this on roadsides1 52 *Paidimia* *guajara*  
(in by common)1 53 *Paspalum* *decidua* *conjugatum*  
common locally1 54 *Digitaria*  
common locally on talus and  
slow rock slopes1 55 *Paspalum* *acuminatum*  
common locally on talus  
and roadsides1 56 *Cassia* *thaifolia* var. *L.*  
rare, but a sit in on limestone1 57 *Polygonia*  
around old house siteAbove waterfall in other stream  
in pools were numerous  
snails (Melanoides? see preserved material).Whole island was as far as  
I saw, made up of tuff and  
volcanic breccia. Weathered  
material is rather sharplystone picked up under cabbage  
palm with smooth petiole.st. sub 1.5 m. tall, erect,  
leaves large; flowers  
dark pinkish purple.

plant purpled green.

leaves also purple.

st. sub 1.5 m. tall; erect.

but has a slightly erect.

green, leafless, fruit green,  
fleshy.great shrubs, or tall,  
stems, leaves variegatedset off from underlying  
rock. Erosion to bedrock is  
consequently very common, especially  
on peaks, shoulders, knobs, etc.

The general vegetation pattern is rather simple, in the parts visited.

In the lowland - a rather scrubbed forest, now composed of *Ficus microcarpa*, *Hibiscus*, *Tilia am.*, *Hemandia sonora*, *Calophyllum inophyllum*, *Morpha*, etc. now much invaded by *Leucaena glauca* <sup>and</sup> *Cannavina* seems to dominate. Much of this is being cleared for gardens.

The upland forest is a mixed type, with *Raphiolepis* (1), *Hibiscus*, *Poncirus*, *sp. laurel* (?), *Liquistrium*, *Cinnamomum*, cabbage palm, *Pandanus*, *Adisia*, *Ochroma*, *Terminalia*, *catappa*, *Bassia* etc. Where this has been opened up, it has been invaded by *Cynara*, *Cannavina*, several bamboos, etc. Where it has been cleared for cultivation, sugar cane is dominant, with, of course, windbreaks of *Calophyllum*. *Gymnopodium* stands of *Pines* occupy many edges, patches, on slopes, etc. Open areas not planted to sugar cane, as well as exposed, cold, etc. etc. are largely dominated by *Eulalia* (?), and where too bare on this, *Calophyllum*

*Calycium*.

On some high but rather protected slopes a patch of *Cyathia*, usually in the general matrix of the forest. On exposed slopes and crests the forest is dwarfed to a dense scrub, but maintains more or less its own composition.

In eroded openings, along edges, *Gahnia* (?), *Fimbristylis*, *Cyperus*, <sup>laxus</sup> and esp. *Hypolytrum* have taken over. A few trees, such as *Wipstroemia*, *Leycesteria*, *Juniperus* etc. seem to favor these places or their edges more than the forest. *Hibiscus* is able to establish itself. In a place that are rather bare *Agave* *de meijeriana* has become well established. Near the large radio station east of Farabee town *Acacia confusa* has become established. It is present in other spots but not thriving specially well. *Leucaena* seems to be the most aggressive species now, forming dense pure stands, producing a carpet of its own seedlings beneath. *Fraxinus griffithii* and *Brahmeria* form patches in openings even up to the tops of the mountains.

142 1950 Marianas

Feb. 17 - ga de on road and  
not ga de around village  
black cinder soil

31558 *Cuminum basilicum*?

cultivated

~~59~~ *Cosmos sulphureus*  
cultivated

59 *Cosmos sulphureus*  
cultivated

60 *Jimson elegans*  
cultivated

61 *Gomphrena globosa*  
cultivated

62 *Celosia argentea*  
cultivated

63 *Cassia alata*  
cultivated

64 *Pithecellobium dulce*  
occasional, planted

65 *Catharanthus roseus*  
common, cultivated and escaped

66 *Datura*  
one plant in garden

Feb. 17 - trail around south  
side of island, coastal  
strip a shelf, mostly  
10-20 m. above sea, backed  
by cliff or a steep slope

67 *Pheloschia compacta* Hoch.  
common locally where strip  
is, almost at beach level

68 *Paspalum conjugatum*  
common along trail

Agriigan Rod. roll &  
Pan roll F

143

Slope of island in *Pithecellobium*  
esp. forest in ravine, + on hillside  
forest near top of peak on a ridge.

planted by aromatic  
herb; stems, bracts, calyxes  
maroon; corolla greenish  
white.

flowers brilliant orange.

coarse herb 0.8 m. tall;  
leaves ~~green~~ crimson.

heads ~~white~~, magenta; bushy  
branching herb.

herb over 1 m. tall,  
tops of spikes magenta.  
shrub 2 m. tall; flowers  
deep yellow.

sterile shrub 2.5 m tall.

suffrutescent herb 0.6 m.  
tall, flowers magenta.

shrub 1 m. tall, flowers  
deep purple, fruit 2 cm.

planted to coconut, with  
thick winding growth of  
*Pipturus*, ~~sp~~ *Perna*,  
young coconut, ferns, etc.

shrub or small tree 3-4 m.  
tall, flowers red in center,  
petals pink distally.  
forming dense patches

31. 69 *Hilimia tiliacea*  
occasional, especially along  
sea shore land

2. 70 *Briza media* var.  
occasional

4. 71 *Cyperus cyperinus* (Retz.) Des.  
one plant seen on cinder  
bank near trail

4. 72 *Carex rostrata* <sup>tenella</sup> (L.) Beau.  
occasional on base cinders  
along trail

1. 73 *Desmodium trifolium*  
common along trail

1. 74 *Cobaltina australis*  
occasional on outcrops of cliff

4. 75 *Cyperus javanicus* Hout.  
occasional along trail

2. 76 *Fanthonia sagittifolium* (L.) Schott  
planted occasionally (C.  
*Neopanax*?)

83. 77 *Gomphrena oppositifolia* (Lam.) <sup>f. sp.</sup> ~~Edmon~~  
common tree, especially  
near base of cliff.

5. 78 *Casuarina equisetifolia* L.  
common tree, especially  
on cliff, and on bluffs  
over looking ocean

2. 79 *Portulaca quadrangularis* Retz.  
common everywhere

3. 80 *Hedyotis biflora*  
occasional in trail

3. 81 *Zoysia tenuifolia*  
common abundant locally

1. 82 *Portulaca oleracea* L.  
occasional along trail

scrubby shrub 3-5 m. tall.

shrub 2 m. tall  
flowering when almost  
leafless, flowers scarlet.

tuft

spreading upright

prostrate; sterile.

semi-scandent shrub;

sterile.

small tufts, leaves  
glaucous.

herb 2 m. tall; leaves  
glaucous beneath, sulphur  
yellow, 2 ft.; flowers  
yellow, very fragrant;

fruit mostly non-volatile.

up to 10 m. tall.

prostrate; flowers white.

forming dense tuft  
in open places.

spreading; fleshy.

146 1950 Marianas

1 83 *Dactyloctenium aegyptium*  
common along trail

2 84 *Lepturus repens* var. *repens* Forst.  
one small patch on top of  
bluff over ocean

1 85 *Ricinus communis* L.  
very local in plantation

1 86 *Pipturus argenteus*  
dominant plant in understory

5 87 *Coccoloba uvifera* L.  
common along trail

1 88 *Capsicum frutescens* L.  
common generally

3 89 *Crotalaria* sp. <sup>that gallifida</sup>  
abundant in openings, and  
along trail

1 90 *Carioca papaya* L.  
common generally

1 91 *Morinda citrifolia* L.  
common generally in understory

2 92 *Polypodium scolopendria* L.  
abundant in openings, and  
along trail

3 93 *Nephrolepis biserrata*  
abundant locally in understory

3 94 *Hyptis pectinata*  
common along trail

95 *Pseudelephantopus spicatus*  
rare along trail

1 96 *Achyranthes aspera*  
local along trail

5 97 *Hedysarum poeppigianum*  
local on <sup>bluff</sup> of great broken lava rocks

Agrihan

147

sp reading right  
spreading, matted.

shrub 2.5 m. tall.

shrub 3 m. tall.

fruits scarlet, flowers  
pale green.

erect suffrutescent herb  
2 m. tall; flowers yellow  
with brown lines.

erect herb or tree, 3 m. tall (up to  
12 m.), fl. flowers cream yellow.  
all seen were of weedy variety  
with very small fruit.

shrub 2.5 m. tall, leaves  
glossy.

horizontal prostrate, ponds  
near it.

big ones and ponds & est.

aromatic herb 1.5 m. tall.

erect, flowers purple.

shrub 2 m. tall, foetid when  
broken; flowers white.

31598 Lachnagrostis maritima  
on bluff of great lava rocks  
2 99 Callicarpa indica on  
coconut on bluff of great lava rocks

31600 Polygonum perfoliatum  
rare, on edge of lava cliff  
3 01 Eugenia reinwardtiana?  
rare, on bluff of great broken lava rocks

3 02 Ficus orientalis var. argentea  
common on general  
1 03 Melanolepis multiglandulosa  
common on general  
3 04 Vigna marina  
common, generally,  
especially, near a lot.  
3 05 Cyperus esculentus  
common, generally

3 06 Digitaria ciliaris  
local in open places along trail

3 07 Tectaria catappa L.  
one tree seen, with, G. and  
Colles, sterile, common, perhaps different  
on sea cliff.

3 08 Phyllanthus mariannus  
very local near sea and edge

1 09 Potentilla sarmentosa (Benth.)  
rare, on trail, colony seen  
on ridge of high cliff.

10 Ischaemum laevigatum (Forst. f.) Mu.  
occasional, on top of cliff

11 Asplenium nidus L.  
common, generally, in shrubs  
M. on lava cliff

sea and salt shrub climbing  
over the vegetation, of corolla  
green, fruit, becoming pink.  
herbaceous, flowers fragrant.

shrub 1 m tall, flowers  
white.

tree 5 m. tall, ripe fruits  
magenta

tree 6 m. tall, fruit woolly, hairy,  
racemes pendulous.

vine climbing in trees

spreading, forming  
low mats, leaves, ciliated.

spreading & cascading.

small tree 3 m tall  
buds only.

erect shrub, sea air  
tree, dried, 1 m. tall.

flexible, spreading, sterile.

woolly, ground - creeping

16 *Pithecellobium*  
common, especially  
around bases of cliffs

13 *Wedelia biflora*  
abundant in open places  
and under trees near the  
edge of slope

14 *Smilia scandifolia*  
common locally, along wall

15 *Psychotria mariana*  
common generally in undergrowth

16 *Alnus* (prestoensis)  
common, tangled in trees

17 *Opuntia* ~~umbellata~~ *ventricosa*  
common, climbing in  
other vegetation

Feb. 17 canyon east side  
of island  
deep gorge cut in scoria

18 *Alcoaia macrophylla* (L.) Kuntze  
common in gorge bottom

19 *Boehmeria*  
common on walls of  
gorge

20 *Piper* (guahouense)  
common on bottom of upper  
part of gorge

21 *Peperomia*  
common on vertical scoria walls

22 *Asplenium unilaterale* Lam.  
common locally in basaltic gorge

23 *Argypteris erecta* (Forst.) Hoffm.  
occasional in upper gorge bottom

scabrous tree; figs in bunches  
scrambling like liana,  
forming like tangles,  
or various other like a bush.  
fls. w. yellow.

small tree & shrub.  
fls. w. white, fruit red when ripe.

extensive vines; fls.  
pale yellow, others pink  
clinging to trees.

High slopes at midalt. to alt.  
in ravines and canyons.

petiole, base purple,  
leaves glaucous green, erect.  
shrub 1-2 m. tall, leaves  
narrow.

shrub 1-2 m. tall, narrow but  
aromatic, spike erect, white  
fls. at top, spike erect.

bottom

plants climbing, w. on long, stiff  
twigs, from erect base, climbing along stems.

31624 Bolbitis  
 common on banks in upper gorge bottom

3 35 Lycopodium Clavatum subglandulosum  
 occasional on banks in upper  
 gorge bottom

3 36 Attagisma  
 rare on scree cliff

17 Fragaria Virginiana  
 common in upper part of gorge

3 37 Miscanthus floridulus  
 dominant in upper gorge

3 38 Agrostis micrantha var. micrantha  
 rare in upper gorge

3 39 Spigocelis bipinnata  
 rare on scree walls

3 40 Ogaria mariana var. mariana  
 common on canyon bottom and

3 41 Polygonum marianum  
 common of ravine

4 42 Lycopodium Thelypteris opulenta  
 occasional on bottom of ravine

3 43 Portulaca oleracea (L.) Fenzl  
 common in upper wilder bottom

3 44 Fragaria Virginiana  
 rare on scree walls

3 45 Burriagrostis asatica  
 common on lower part of canyon

3 46 M. mariana  
 common in lower part of canyon

3 47 Polygonum tectorius Park.  
 infrequent on scree walls

3 48 <sup>1616</sup> Lycopodium leading to  
 poor life soil, fertilizer on east  
 Arizona short crest.

3 49 Agrostis micrantha,  
 at top, about 1000 ft. high,  
 rare forming 2-3' grass, bracts orange,  
 in moist water, on a high  
 level of elevation.

3 50 Agrostis rare

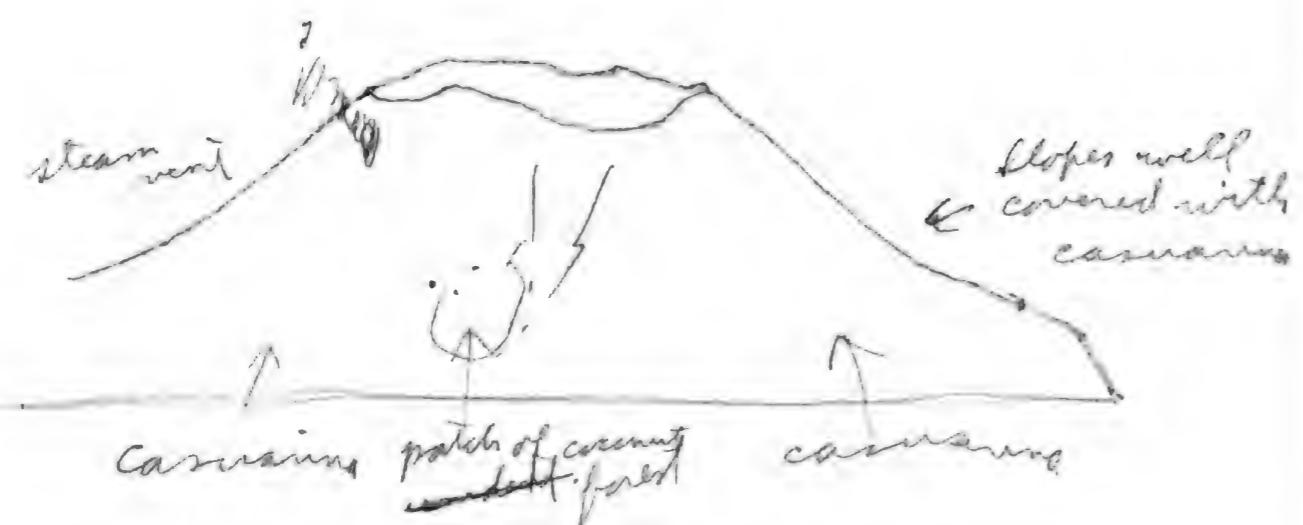
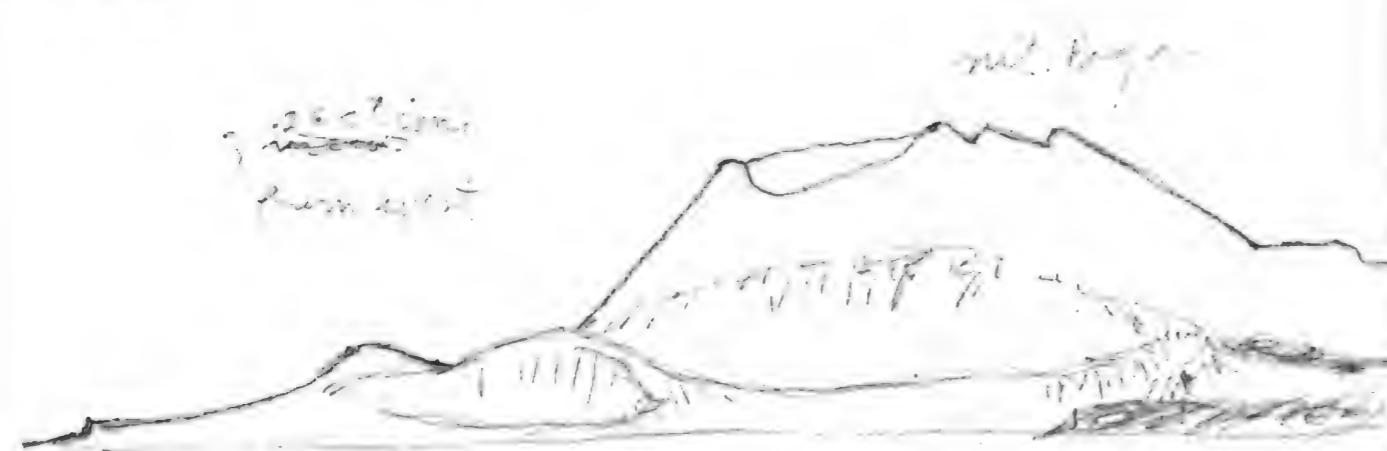
3 51 Agrostis small  
 small tufts of m. tall, 2-3' high  
 (bottom of scree slope to sandstone)  
 black on m. tall, flowers  
 white, with sweet smell.  
 May be collected in scree,  
 sandstone and talus.

3 52 Agrostis rare, all along with  
 scree, black, flowers white,  
 tufts of m. tall, 2-3' high, sandstone.

3 53 Agrostis tall (m. tall) in sandstone.

3 54 Agrostis rare, scree, sandstone.

154 1950 Mariana

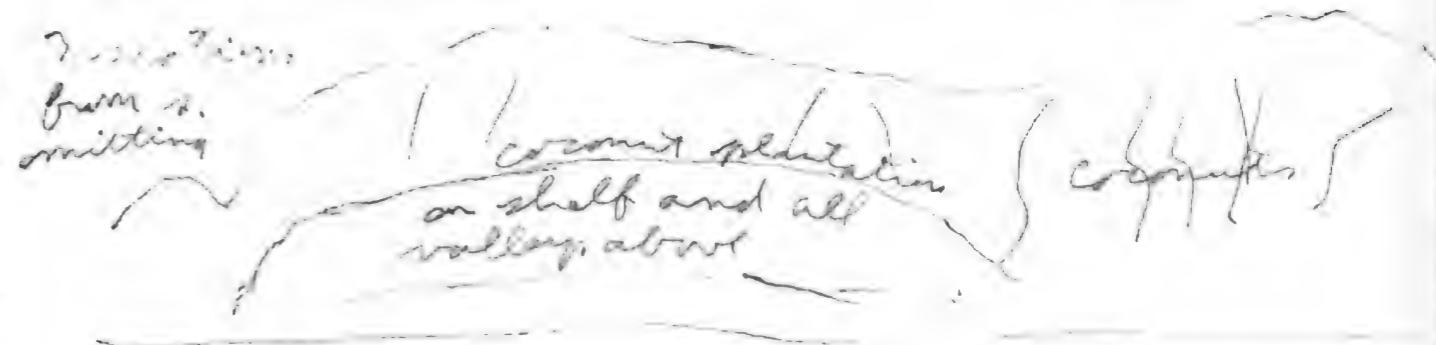
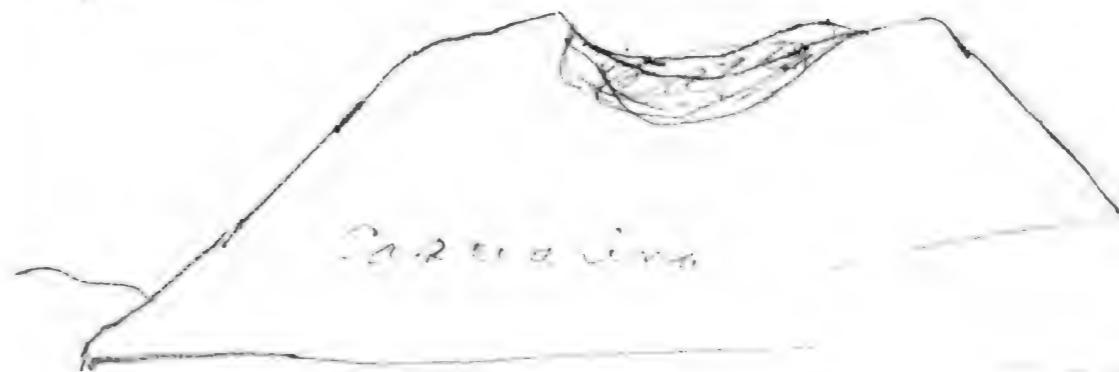
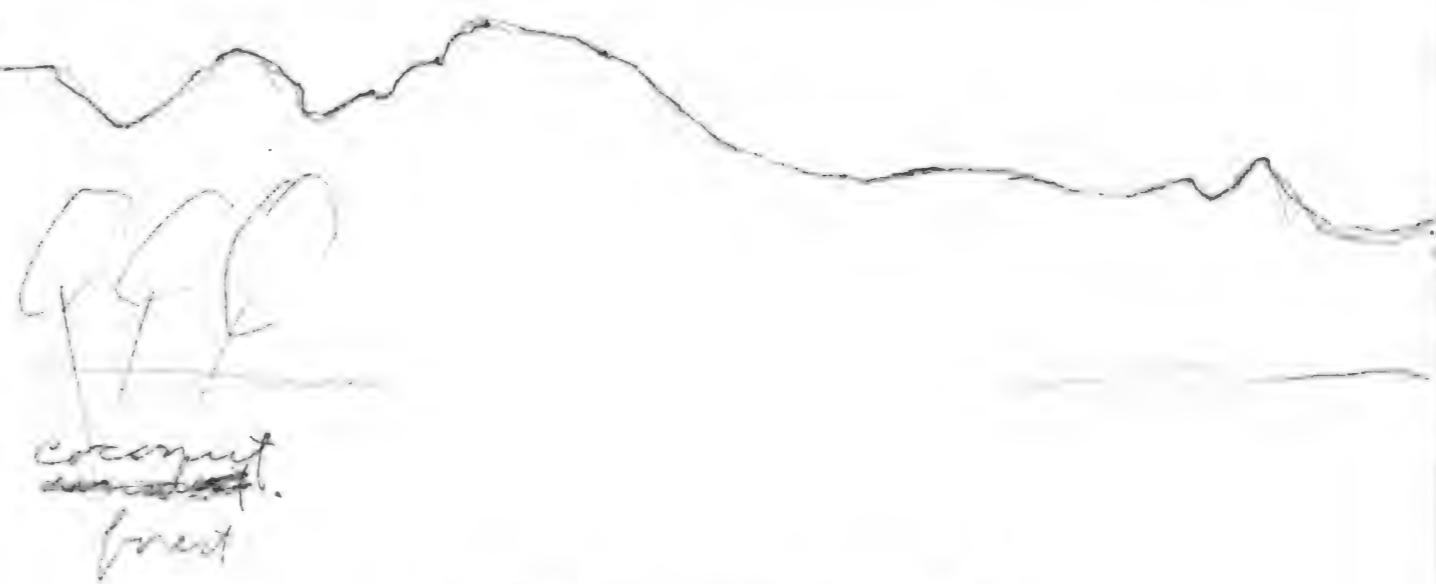


South end has no forest of any consequence, nor any limestone. High ridges and slopes miscanthus. Cliffs bare or Miscanthus. Everything else planted to coconut. S. end. banded cliff and lava.

Bagan

155

row of wood fruiting trees seaward to east.



Feb. 13 roadside near landing

3/18/39 *Panicum amabile* Trin.  
3 rare

3 40 *Heliotropium*  
occasional

White cliff on east side, about  
midway. Not seen closely,  
can't say if limestone.  
Has dark base at base.

(C. M. Gray says) a similar  
white layer of hard rock 2-3  
ft. thick inside & out, of  
Mt. Pagan.

Choo says there are about 50  
acres of cotton, with windbreaks  
of madfruit trees found, as  
well as orange & bananas.

spreading tufts, prostrate  
flower white.



from north,  
upper slopes mainly *Micranthus*,  
lower slopes mainly wooded.  
wooded ravines running fan  
out on upper slopes. Middle  
slopes of main volcano have  
sparse low woody vegetation.

Gently sloping peninsula  
to north is a long by  
lava flow apparently  
originating at the base  
of the main volcano.

It is covered by a vegetation  
of *Pithecellobium*, *Ficus tinctoria*,  
*Melanolepis*, *Vitex*,  
*Tiliaceus*, *Calycarpa* (more  
common toward head of  
flow), *Morinda citrifolia*,  
*Psydraxia manana*, etc.,  
with sparse undergrowth  
*Ipomoea* - *ridleyi* & *phylladenia*  
& *Ipomoea* oblonga  
under tree.

Feb. 18 - around Pandico Village  
in open coconut plantation  
and gardens

31641 *Cyperus javanicus* Houtt.  
occasional on open slopes  
above sea cliffs.

42 *Portulaca oleracea* L.  
~~common~~ on cliffs above sea

43 *Callicarpa candicans*  
are on sea cliffs

44 *Eragrostis amabilis* Stevella  
occasional on open ground  
at top of bluff

45 *Ipmoea pes-caprae*  
common on sea bluffs

46 *Casuarina equisetifolia* L.  
only seen on sea bluffs

small tufts, leaves dull  
gray-green.

fleshy, prostrate to ascending,  
sterile shrub.

spreading tufts.

prostrate, flowers purple.  
tree 4 m. tall, sterile.

31647 *Thespesia populnea*  
a few small trees on top of sea cliff

48 *Euphorbia hirta*  
common weed in gardens

49 *Vernonia cinerea*  
common weed in gardens

50 *Phyllanthus ~~cinereus~~ amarus* Schum. & Th. <sup>det.</sup>  
<sup>G. L.</sup>  
Webster, 1955  
common weed in gardens

51 *Clausena lindleyana* Gaertn.  
common weed in gardens

52 *Catharanthus roseus*  
abundantly cultivated

53 *Amaranthus viridis* L.  
abundant weed

54 *Solanum surinamense*  
sparingly cultivated

55 *Panax trifoliate* L.  
Feb. 13 - forest on lava flows

55 *Canavalia ~~sinensis~~ sativa*  
megalantha Merr. var.

56 *Ficus microcarpa* L. var. *variegata*  
common in forest

57 *Neurolema ~~strobila~~ oppositifolia* (Lam.) <sup>Strob. fad.</sup>  
<sup>det. Schum.</sup>  
occasional in forest

58 *Hibiscus tiliaceus*  
common in forest

59 *Polygodium scolopendria* Linn.  
abundant on lava in shade  
of forest.

60 *Asplenium nidus* L.  
abundant on lava in shade of forest

61 *Morinda citrifolia*  
common in woods and in plantations

shrubby tree 3-4 m. tall.  
stems ascending.

flowers purple.

50 *Clausena lindleyana* Gaertn.  
common weed in gardens

52 *Catharanthus roseus*  
abundantly cultivated

53 *Amaranthus viridis* L.  
abundant weed

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sparingly cultivated

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abundant on lava in shade  
of forest.

60 *Asplenium nidus* L.  
abundant on lava in shade of forest

61 *Morinda citrifolia*  
common in woods and in plantations

31462 *Guazuma ulmifolia*  
one small shrub tree in forest

63 *Melanophrys*, small tree to 10 m.  
one of commonest trees in forest

64 *Myrsinella* or *Myrsinella*  
common in forest

65 *Pithecellobium quadrivalvis*  
common in forest, in forest, in forest

66 *Pithecellobium quadrivalvis*  
abundant in forest, dominant

67 *Pithecellobium*  
one small shrub, seen in degraded forest

68 *Paraserianthes lophantha*  
common along trails in forest

69 *Premna oblongata* var. *oblongata*  
common in forest on high parts of hill

70 *Stelaria lithosperma* (L.) Sw.  
occasional in forest on rocks,  
especially near upper part of forest

71 *Erythrina variegata var. variegata*  
occasional in forest

72 *Blechnum brownii* f. *puberulum* Leonard  
abundant along trails and  
in plantations, for a long time  
ago, stands are grown on the

73 *Manis tricuspidata* Kuhl.  
common in forest

74 *Malacomeles*  
occasional, especially near trails  
in forest, on heads of flows

75 *Calotropis gigantea*  
common locally in forest

tree 3 m. tall

small tree 3 m. tall, open  
fruit mostly greenish brown.  
Leaves 3 m. tall, flowers  
white, fruit red when ripe.  
triangular when ripe.

small tree 5 m. tall, fruit  
white, fleshly.  
vine climbing over trees, stems,  
leaves ~~green~~ <sup>green</sup> red on edges.  
suffrutescent bush, flowers  
pale green, ripe fruit red.  
a small tree 6 m. to 8; ripe  
fruit almost black.  
a small shrub, culture unknown,  
fruit white.

tree with very ascending  
branches, flowering with  
leafless, flowers white.

shrub 3 m. tall, otherwise  
white, flowers white.  
fleshy, pendent flowers.

semi scandent shrub,  
trailing portion white.

3167 2 small lava fields  
 5 5 climbing on tree root, lava  
 1 77 *Taxiostylis clav. mariannensis*  
 on branch of *Elaeocarpus* tree  
~~Phacelia~~ *fuliginea*  
 2 78 *Lepturus*  
 3 79 *Acacia*  
 4 80 *Myrsinaceae* in forest  
 5 Feb. 19 - boundary between  
 forest and open grassy lava  
 5 80 *Premna* <sup>obtusifolia</sup> (Bl.) (Other two)  
 isolated trees of open edge  
 5 81 *Pouteria obovata*  
 common in edge of forest  
 6 82 *Hedysarcus* <sup>forbesii</sup>  
 rare on lava edge in open  
 5 83 *G. microth. s. micanthum* var. *micanthum*  
 on lava edge  
 3 84 *Ficus prolixa* var. *subcordata*  
 rare on lava edge  
 3 85 *Caseytha filiformis*  
 rare on shrubs on open lava edge  
 3 86 *Macaranga* <sup>taigadae</sup> (Willd.)  
 common on open lava ridge  
 5 87 *Phyllanthus mariannensis*  
 common on open lava ridge  
 3 88 *Ageratum conyzoides*  
 edge of forest  
 3 89 *Gentianopsis* <sup>scabrida</sup> (Willd.)  
 edge of forest, on quarry slope

roots, flat, grey, fruit and  
 buds green.  
 1 80 *Lepturus*  
 2 81 *Acacia*  
 3 82 *Myrsinaceae* in forest, lava  
 4 83 *Pouteria obovata*  
 5 84 *Ficus prolixa* 1 m. tall,  
 almost leafless; figs green.  
 6 85 *Caseytha filiformis*  
 7 86 *Macaranga* <sup>taigadae</sup> (Willd.)  
 8 87 *Phyllanthus mariannensis*  
 9 88 *Ageratum conyzoides*  
 10 89 *Gentianopsis* <sup>scabrida</sup> (Willd.)

1. 93 *Calotropis procera* plantations  
cleared of only few of them.

31590 *Amaranthus dubius*  
common weed

91 *Malvastrum coccineum deliciosum*  
occasional weed

2. 90 *Citrus aurantifolia*  
thicket in plantation

93 *Nicotiana tabacum*  
planted in clear places  
under coconut trees

2. 94 *Pandosoma sagittifolium* (L.) Schott  
commonly planted under  
coconut trees

95 *Abrus precatorius*  
common weed generally

96 *Homoea stictocardia* *campanulata*  
common under trees

97 *Bauhinia varia asiatica*  
occasional

2. 98 *Carica papaya*  
abundant weed generally

3. 99 *Nephrolepis hirsutula*  
common locally

31700 *Triumfetta semitiliata*  
one much trampled plant seen

1. 100 *Polygonum perfoliatum*  
no plant seen, planted

101 *Lida acuta* L.  
uncommon

1. short herb up to 1 m. tall  
(note differences in specimens)  
herb 1 m. tall, flowers  
orange-yellow.

fls. small tree, strong  
lemon scent when broken;  
flowers white, very fragrant.  
short herb 1 m. tall, smaller  
lvs. pink.

up to 1.5 m. tall, leaves  
dull, glaucous, especially  
beneath. "S. nolulu" (Honolulu?)  
cultivated for edible rhizome.  
vine, very tough stem,  
climbing in trees and  
shrub, flower purple.

vine, extensively creeping,  
flower purple.

small tree, 5 m. tall, sterile.

unbranched tree up to  
6 m. tall, all seen were of  
small-fruited wild var.  
rhizome and fronds red.

up to 1 m. tall, flowers  
yellow.

shrub 0.6 m. tall, flowers  
white with pink mid.

herb, much branched, 1 m. tall  
attacked by mildew.

Feb. 19



cliffs and ravines with  
scrubby vegetation. Some are  
bare & completely planted to  
coconut. The slopes grassy  
but higher ones on volcanos  
with very fine peat beds  
and swamps.

The savines are wooded with, *Ficus*, *Vindoxis* and *F. prolixa*, *Lippia*, *Hibiscus*, *Lilium*, *Morinda*, *Melanolepis*, with occasional *Platynora*, *Cladocarpus*, *Pouteria*, toward head. *Pterospermum* and *Alnus* are common vines, with *Fragaria* toward head.

*Polyodium scolopendria* and  
*Asplenium nidus* very common  
on rocks, under tree forest.

not much other wind-deposited material. Walls of ravines, and even coarse granular ash & cinders tend to be vertical.

*Pteris* less common.

There were many rocks.  
I went above rocks on talus.  
There was a talus, in a  
thicket of *Giliastrum pilosum*  
that almost defies penetration.

Cliffs, and top of beach, covered by *Ipomoea pes-caprae* and *Wedelia*. *Hedychium* common on cliffs. *Terminalia catappa* common on cliffs & talus, also *Pandanus* (these are not mountainous trees.) *Casuarina* the tree and *Clusioides* on cliffs.

Soil in ravine and plantation  
tests about pH 7.

Ms. Pacifica 10110 seen  
at Camagan.

Co. counts of a total of just  
about a dozen here and they  
they could grow. Don't expect to  
be as well highly up.

Turnip *etc.* is the dominant weed here in plantations. Ground

south, and is a big bluff  
with tremendous areas of  
landslides and great talus  
slopes at base - quite almost  
without vegetation, of a  
tan colored material.

Feb. 19 Vicinity of Asongsong  
village

bluffs just above  
a sea <sup>to 15 m.</sup>

1703 *Fimbristylis cymosa*  
cavities in tuff cliff.

04 *Pandanus tectorius*  
occasional on talus and cliffs

05 *Pouteria spectabilis*  
on talus just out of reach  
of waves

06 *Callicarpa candicans*  
on rocks just above waves

07 *Hedysotis portoricensis mariannensis*  
on cliffs, common

08 *Wedelia biflora v. argentea*  
common on cliffs

09 *Zygia tenuifolia*  
common carpeting tops of  
cliffs and ledges.

same - village and plantation

10 *Dactyloctenium aegyptium*  
in path, common

11 *Digitaria timorensis radicans*  
occasional in plantation

small tufts on slopes  
dead.

tree 10 m. tall; fruit  
green.

tree 3 m. tall, bushy,  
fruit green.

red shrub, flowers purple  
shrub 2.7 m. tall, flowers  
white.

scandent - herb, flowers  
yellow.

forming dense soft turf.

spreading tufts  
prostrate

21712 *Digitaria setigera* <sup>pruriens var. pruriens</sup> appearing on <sup>inhabited</sup> <sup>openings above cliff</sup> prostrate to ascending

13 *Digitaria setigera* <sup>pruriens var. pruriens</sup> <sup>openings above cliff</sup> prostrate to ascending

14 *Euphorbia prostrata* *thymifolia* <sup>in soil</sup> prostrate

15 *Cocchinchinella brownii* B. & S. <sup>in plantation, occasional</sup> culms ascending

16 *Cassia sophia* <sup>are in plantation</sup> erect, flower yellow

17 *Pachyrhizus erosus* <sup>corn shown around edges</sup> fruit brittle (only one seen) vine climbing over other vegetation

18 *Hyptis pectinata* <sup>common around village</sup> erect herbs on tall, aromatic flower whitish.

19 *Lida acuta* L. <sup>common in plantation</sup> erect suffrutescent herbs, <sup>1 m. tall, leaves with midrib.</sup> (with # 31720, no integuments) <sup>leaves with # 31720, no integuments</sup> erect suffrutescent herbs, <sup>1 m. tall, flower yellow.</sup> (with # 31721, no integuments) <sup>1 m. tall, flower yellow.</sup> <sup>stems.</sup>

20 *Lida spinosa* <sup>common in plantation</sup> <sup>extensive vine.</sup>

21 *Passiflora quadrangularis* <sup>Indiana var.</sup> <sup>common in plantation very common</sup> prostrate, open flowers lavender, diastogamous, pale green.

22 *Operculina verticillata* *verticillata* <sup>common on roadside in thickets</sup> erect suffrutescent herbs, <sup>1 m. tall.</sup>

23 *Cornus mas* *Bengalensis* <sup>common in open places in plantation and village</sup> vine, flower bright yellow, fruit, very glaucous when not quite ripe.

24 *Lida - hornifolia* L. <sup>common about village</sup>

25 *Benincasa hispida* <sup>occasional about village</sup>

26 *Triumfetta semitiliata*  
common in village and  
dominant weed in plantation

27 *Clitoria*  
common about village  
and in waste spots nearly  
same wooded regions  
above village

28 *Dolichos lablab*  
common in outskirts of village

29 *Ricinus communis* L.  
common in village

30 *Crotalaria pallida* Willd.  
occasional around village

31 *Zponocex indica* (Burm.) Merr.  
rare in village

32 *Mangifera indica* L.  
rare in village, in vines

33 *Ficus tinctoria* var. *neobadiana*  
common gene ally

34 *Annona reticulata* L.  
rare in plantation

35 *Cupaniavus compositus*  
occasional in plantation,  
also in forest

26 *Castilleja*, up to 2.5 m. tall,  
flowers yellow.

27 *vine*, flowers bright  
blue.

28 *vine* twining over trees,  
flowers lavender.

29 *Castilleja* 1.5 m. tall,  
flowers green, stigmas  
reddish.

30 *Castilleja* 1.5 m. tall,  
flowers yellow with brown line.

31 *vine*, flowers pale blue.

32 *tree* 6 m. tall, flowers  
of emerald yellow.

33 *small tree*; fruit  
yellow, turning orange  
when dead ripe.

34 *tree* 7 m. tall, fruit  
dark red when ripe and taste.

35 *prostrate*, leaves  
crisped.

same - wooded ravine  
above village, woods  
of *Pipturus*, *Ficus*, *melastomis*, etc.

31736 *Artocarpus altilis* (Park.) Fosb.  
several trees in ravine bottom  
5 37 *Ficus prolixa* var. *carolinensis*  
shrub on wall of ravine  
5 38 *Ficus prolixa* var. *carolinensis*  
rare in ravine bottom  
2 39 *Polyscias grandifolia*  
occasional in ravine bottom  
and on walls, in undergrowth,  
5 40 *Elaeocarpus joga* bands of  
rare in upper bands of

*neiosperma*  
41 *Chionanthus oppositifolius* (Lam.) <sup>Zoll. & Tsch.</sup> ~~Salisb.~~

occasional

42 *Poncirus obovata*  
common in upper branches  
of ravine

43 *Terminalia catappa*  
occasional

44 *Miscanthus floridulus*,  
forming dense matted tufts  
above forest on sides, dominant  
plant on open slopes

45 *Heteropogon contortus*  
to top of vertical walls,  
common

46 *Fragrantia renneckeri* Warb.  
common in upper bands of ravine

tree 10 m. tall

shrub 3 m. tall, fig green.

large banyan, leaves  
very young, fig green, rare.  
sparsely branched  
shrub 3 m. tall.

large rounded tree, 15 m.  
tall, old leaf, wing  
bright red; flowers white;  
fruit bright blue, glossy.  
tree 6 m. tall; fruit on  
ground beneath.  
large rounded tree, 15 m. tall;  
fruit rare, green.

tree 7 m. tall, leaves almost  
all shed, scarlet - picked off ground.  
5 m. tall, all stem, sterile.

inflo.

wings, all seen sterile.

178 1950 Almagan

same, - village + plantation

31747 *Pithecellobium dulce*  
- planted in village  
48 *Lysimachia trifolia*  
base of trees, in plantation  
49 *Lynedochia nodiflora*  
along trail, occasional.

179

shrub 3.5 m tall  
- flowers greenish,  
prostrate.

~~occasional~~ red, flower  
yellow.

180 1950 Hydrometer readings  
for sp. gr.

page	locality	date	source of H <sub>2</sub> O reading	sp. gr.
32	agana swamp, Guam	Jan 25	stagnant channel	1.0021
62	Lake Saipan	Feb. 3	Labre	0.999
	"	"	"	1.000
	"	"	"	0.9995
	Rain water, Saipan			1.003
	Saipan tap water, Chalan Kanoa			

181

Feb. 21 - <sup>dry</sup> Dogenyama Ridge  
soil, and south ridge of  
volcano being a conglomate  
with a calcarous limestone  
matrix, flinty, and with a  
thin strip of coal capping  
along the west side on the  
top. The material weathers  
into a mottled red and blue  
clay. On a large flat bounded  
area of this, the surface layer  
is dry weather, are puffy and  
air-filled, showing, after a day,  
that the water content is high.

This clay, in bare spots, <sup>at greatest depth</sup>, tested  
pH 5 or less. Around edges were  
grasses (mostly *Chrysopogon*)  
and *Parfalticum scabiosoides*.  
and invading the same  
sort of material, tests made  
on soil taken from a among the  
grass roots yielded a range  
varying from pH 5.5 to pH 6.5.

Apparently the humus produced  
by this vegetation tends to be less  
acid than the material resulting  
from decomposition of the (shiolite, etc.) rock.  
Quartz granules up to the size  
of pebbles are abundant here  
in the soil, limestone common  
area.

The vegetation here, though  
soil dry, was *Miscanthus*,  
invasor and in grass  
dominated by *Agrostis* in  
a transition to and from a  
scrub. The parts of this  
still remaining at the flat  
there was dry, puffy soil  
covered and rather health  
growth, shading the grass  
which becomes more and  
flabberg. possibly at first  
uninhabited, ~~but~~ ~~but~~ ~~but~~ ~~but~~  
at least April 3 the grass  
was red over most of the  
area. The trees were completely  
killed. ~~but~~ ~~but~~ ~~but~~ ~~but~~  
occupied the ground completely.  
It was a evidently soil, burned  
off without any loss of the  
soil.

On the west break of the ridge there  
was eroded area, in part exposing  
the thin limestone cap, in part  
in pure volcanic material. *Chrysopogon*,  
~~Phragmites~~, ~~and~~ *Miscanthus* and *Agrostis*  
predom. as on south. *Calystegia*  
rare but seen on limestone.

*Heteropogon*, *Glycine* and *Gimelis*,  
*Glechoma*, *Euphorbia*, *Centaurium*,  
*Lysimachia* ~~and~~ *caerulea*, etc.  
confined to volcanic soil.

Boundaries sharply defined.  
*Phragmites* only seen on limestone.

31740 *Leucosia* *crenata* (Burm.)  
common on older, secondary  
limestone on top of  
limestone and volcanic soil.

4 51 *Euphorbia*  
common on bare spots on  
volcanic soil

52 *Gleichenia linearis*  
common on volcanic soil

53 *Playanthus*  
common on limestone

54 *Glossogyne tenuipolia*  
occasional on bare spots  
on volcanic soil.

55 *Heteropeltis confertus*  
common on volcanic soil

56 *Fimbristylis*  
occasional on volcanic soil

57 *Lygodium scandens*  
occasional on volcanic soil

58 *Centhranopeltis*  
common on volcanic soil

Burke (geologist on Laipan and  
Tinian survey) says, most  
of limestones on Laipan are  
much mixed with  
volcanic material.  
affectionately, debris deposited  
when the former reefs were  
formed. This type of limestone

rounded shrub 1 m.  
tall; leaves leather, flock  
white with purple veins.  
fruit white, fleshy.  
seed, flesh white.

dwarfed tree, in soil  
spots seen much more  
frequent.  
not dwarf shrub;  
leaves stiff, coriaceous,  
smooth.

tufts

small tufts.

ubiquous underground.  
found tangled.  
small plants to ~~trees~~  
vines, leaves gray-green,  
especially beneath.

and by the origin of the  
deep red clay soils on the  
limestone beds on the E. side  
of the island. Of course there  
is also a possibility  
of debris of deposit of volcanic  
material on the limestone, but  
subsequent weathering.

✓ Feb. 22 - Chalan Kanoa  
on sandy bottom of lagoon  
in about 1 m. of water

31759 *Thalassia hemprichii*  
common

✓ 60 *Halophila*  
common, forming tufts

✓ Feb. 23 Koblenz Field

✓ 61 *Indigofera endecaphylla*  
on large patch, on coral debris

✓ \* Feb. 23 - San Antonis  
roadside

✓ 62 *Indigofera suffruticosa* Mill.  
common

✓ 63 *Matthiola crassifolia* (Lam.)  
common

✓ Feb. 23, ~~old~~ Hills above Tamajag  
old coral quarry

✓ 64 *Imperata*  
common in open full sun  
in crevices and on top of rocks

✓ Feb. 23 - ~~old~~ Tagpochan  
a coral limestone ridge  
was bounded on both  
sides by cliffs, culminating  
in Ogas Tagpochan, 1555 ft.  
This ridge is partly wooded  
with *Pandanus* (sp.), *Aglaia*,  
*Pisnia umbellifera*, *Guamia*,

rhizome buried; sterile

rhizome buried, fruit  
globose. leaves lanceolate,  
venulose.

prostrate herb. forming  
a deep mat; flowers red.

shrub. 1 m. tall, flowers  
reddish.

branched herb.

rhizome creeping,  
slightly buried in  
debris.

*Ochrosia*, *Claoxylon*, *Polyscias*, etc.  
The limestone beneath is extremely  
rough. *Diploknema* and *Musa*  
cover this forest in an immense  
tangle. The forest has  
been badly battered during  
the war, and presents an  
extremely bedraggled appearance.

The top is plateau like, but in the form of terraces, with grassy areas, probably former farms, and so, a not much man construction, especially on the topmost peaks.

The top is open on the windward (east) side and covered with *Miscanthus*, growing on bare limestone. The soil around its roots tested bet. pH 7 and 7.5. None of its common associates were present. *Phyllanthus mariannensis*, *Dyosperma guineense*, and several weeds grow with it. The stand is quite

ridge ~~sooty~~ of <sup>north</sup> of peak

- 31765 *Antigonon leptopus*  
planted around dwelling
- 66 *Hippobroma longiflora*  
roadside weed
- 67 *Alocasia*  
colonies in edges of forest

thick. Little black wasp and large black ants were present.

It will take the forest here some time to regain its normal condition. It also shows evidence of considerable battering from wind. It is fairly penetrable, except for the rough subshrub layer, the sharpness of which is concealed by vines and, in opening, grass.

Snails (Achatina) are common, but live ones few in comparison with dead ones, and with number observed in 1946.

Kod. roll 9

vine with rose-pink flowers.  
herb, stem  $\frac{1}{2}$  in. wide,  
ascending near tip,  
up to 2.2 m. long, fl. white  
stems up to 1 m. tall,  
leaves up to 4 dm. long,  
petioles deep purple, leaves  
clear green, spathe pale  
green, darker in closed  
lower part, spadix buff,  
white in flowering part, turning  
pinkish, odor somewhat bad.

page.	locality	date	time	wet b.	dry b.
	Maglein Islet. part.		8:20 a.m.	77.5	82
			"	76	82
			"	76	82.5
16	Bigej		1:10 p.m.	80	88
16	"		"	72.5	84
	"	"	"	78	83
	"	"	1:15	78	85
	"	"	1:20	79.5	85.5
24	Guam	J. 24	11:45	79.5	86
	"		"	80	87.5
	"	"	11:50	76	85
	"	"	"	78.5	85
	"	"	12:15	78	88
26	coral pit	"	3:40	76	86
	"	"	"	77	86
	"	"	"	76	85
	radio. fort R.	"	3:45	75	81.5

inside b. of  
part of b. of exposed to sea breeze  
outward. Wall in sunlight, no breeze  
sparse coconut pl. 0.5 m. from  
ground

ground under coconut trees  
" " Wedelia  
Open sun + wind. Head high  
sparse coconut pl. 0.5 m. from g.  
full sun

in shade in undergrowth of thick  
scrub, deeper in thicket.  
" broken sun in thicket  
full sun and breeze  
full sun, open.  
in sparse jungle on limestone  
Waist high in need brake  
ground level in need brake

31768 *Discocalyx*  
1 in edge of forest in undergrowth

69 *Discocalyx*  
in edge of forest in undergrowth

70 *Claoxylon*  
in forest, rather common

71 *Ochroma oppositifolia* (Lam.) K. Schum.  
common in forest

72 *youngia japonica*  
common on wall along road

upper peak and vicinity  
large area of thicket  
with patches of forest  
on rim slope

73 *Centella asiatica*  
common on base coral of peak

74 *Dryopteris*  
in rock crevices on peak

75 *Bidens pilosa* L.  
on rock trail on peak, common

76 *Dryopteris*  
on base ~~base~~ coral with

77 *Macrorhynchus flabellifer*  
down, and on large limestone  
and sandstone (windward) side  
of peak

78 *Pisonia umbellifera*  
common in forest on peak

shrub 1 m. tall, flowers  
coral red, lobes firm,  
somewhat fleshy.

shrub 1 m. tall,  
fruits mostly immature,  
ripe ones bright red.

shrub 1-2 m. tall,  
leaves smooth

small tree, flowers  
white, fragrant.

flowers yellow.

Arizona jessamine  
climbing, 3 m. tall

small tree 6 m. tall, wood  
very soft, leaves white  
fruit 1 mm. long, so soft  
very sticky on ridge.

31779 # *Polygonia grandifolia* Volk.

common in forest

✓ 80 *Mucuna*  
common in forest✓ Feb. 23 - *Gardenia*  
around old warehouse  
on flat coral sand and rubble✓ 81 *Plumbago* *odorata*  
occasional✓ 82 *Catalpa* *longissima*  
occasional, planted?small tree to m. tall,  
fruits turning purplish,  
woody liana,  
climbing over trees,  
flowers pale green.✓ shrub to m. tall, aromatic;  
flowers dull pale lavender,  
tree 5 m tall, flowers purple with yellow edge,  
white; fruit red/orange.

196 1950

197

198 1980

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**殺菌整腸剤  
「ナンポール」**

「ナンポール」はツユクサ科に属する熱帶植物の有効成分を抽出したるものにして微かに芳香性刺激味を有する帶紫紅色のアントチアント色素肥厚類を主成分とする薬剤なり。

「ナンポール」の全成分は未だ確かならずと雖も既に数年の臨床實験と幾多の整理試験とに依り確効の正確無敵なる即効性は臨床家をして常に驚嘆せしむるところにして而も何らの副作用なきは明白に立証せられて居る。

強烈なる殺菌性を有するを以つて細菌性下痢即ち夜病・赤痢・チフス等の如き熱性下痢に對し本剤の優れは眞に適切にして普通一時間乃至二時間にして自覺症狀及び客觀症狀を消失し、明確に治療の停機を認めるに至る。又細菌性下痢にも連続服用により著しく効力を現す。

**適 应 症**

1. 痢病、赤痢、腸チフス、バラチフス、その他腸熱性下痢。
2. 肉類、魚貝類、其他食物中毒性腹痛下痢及蒸発病。
3. 乳兒の綠便急性及慢性腸加等兒及結核性下痢、風溼。

**用 法 及 用 量**

1. 「液剤ナンポール」は一日三回一回20cc(アンプル入)、乳幼兒は半量或空腹時に服用し場合に依りは同一量服用するも差支へなし。
2. 「散剤ナンポール」は一日三回四粒(20cc)、乳幼兒は半量或空腹時に微温湯にて服用す。
3. 「液剤ナンポール」「散剤ナンポール」共に(若干の砂糖、シロップを和して服用するも可)粒状に依り食間に散回服用し又同時に多量を服用するも副作用皆無なり。
4. 但普通常剤は一アンプル、散剤は四粒にて充分其の効果を擧るを常とする。

**使 用 上 の 注意**

1. 胃腸過多症に基因する下痢には効力薄し。
2. アルカリ性薬物即ち重曹、マグネシヤ、珪酸アルミ、吸着剤カルボン活性白土等は化學的變化或は物理的變化を起して効力を減退せしむるを以て「ナンポール」服用の前後二時間……三時間は之等の製剤の服用を禁す。
3. 本剤服用の場合は下剤として「ビタミン油」その他この種下剤を用ゆる必要を認めず。且つ之等の下剤を使用せざる方が恢復を早め結果に於て極めて良好なり。

**内 容**

〔液剤ナンポール〕

リエオ・ディスカラ・ハンス抽出液	99.87(%)	〔散剤ナンポール〕	リエオ・ディスカラ・ハンス蘭原エキス
酒石酸	0.05	酒石酸	8.70(%)
安息香酸	0.05	安息香酸	0.50
尿素	0.03	尿素	0.50
白礬		乳酸	50.00
		雷粉	30.00

内 容  
液剤ナンポール 20cc アンプル 3 管入 散剤ナンポール 1.2 錠入

製造販賣元  
東京都中央区日本橋兜町一ノ四番地(高麗ビル内附)

南方药品工業株式会社

# 殺菌整腸剤 「ナンポール」

「ナンポール」はツユクサ科に属する熱帶植物の有効成分を抽出したるものにして微かに芳香性鞣酸味を有する帶紫紅色のアントシアニン族色素配糖體を濃厚に含有する錠剤なり。

「ナンポール」の全成分は未だ審査に至らずと雖も既に數年の臨床實驗と幾多の薬理試験とに依り薬効の正確録敏なる即効性は臨床家をして常に驚嘆せしむるところにして而も何らの副作用なきは明白に立証せられて居る。

強烈なる殺菌性を有するを以つて細菌性下痢即ち疫痢・赤痢・チフス等の如き熱性下痢に對し本剤の投與は眞に適切にして普通一時間乃至二時間にして自覺症狀及び客觀症狀を消失し、明確に治癒の轉機を認めるに至る。又結核性下痢にも連續服用により著しく効力を現す。

## 適 應 症

1. 疫病、赤痢、腸チフス、バラチフス、その他腸熱性下痢。
2. 肉類、魚貝類、其他食物中毒性腹痛下痢及蕁麻疹。
3. 乳兒の綠便急性及慢性腸加答兒及結核性下痢、悪阻。

## 用 法 及 用 量

1. 「液剤ナンポール」は一日三回一回宛(20cc アンプル入)、乳幼兒は半量宛空腹時に服用し場合に依りては同一量服用するも差支へなし。
2. 「錠剤ナンポール」は一日三回四錠宛、乳幼兒は半量宛空腹時に微温湯にて服用す。
3. 「液剤ナンポール」「錠剤ナンポール」共に(若干の砂糖、シロップを和して服用するも可)瓶状に依り食間に數回連用し又同時に多量を服用するも副作用皆無なり。  
但普通液剤は一アンプル、錠剤は四錠にて充分共の効果を擧るを常とす。

## 使 用 上 の 注意

1. 胃酸過多症に基因する下痢には効力薄し。
2. アルカリ性薬物即ち重曹、マグネシヤ、珪酸アルミ、吸着剤カーボン活性白土等は化學的變化或は物理的變化を起して効力を減退せしむるを以て「ナンポール」服用の前後二時間……三時間は之等の製剤の服用を禁ず。
3. 本剤服用の場合は下剤として「ヒマン油」その他この種下剤を用ゆる必要を認めず。且つ之等の下剤を使用せざる方が恢復を早め結果に於て極めて良好なり。

## 内 容

### 〔液剤ナンポール〕

ロエオ・ディスカラ・ハンス抽出液		99.87(%)
酒	石	酸
安	息	香
尿	乳	糖

### 〔錠剤ナンポール〕

ロエオ・ディスカラ・ハンス調厚エキス		8.70(%)
酒	石	酸
安	息	香
尿	乳	糖
素	液	粉

## 包 裝

液剤ナンポール 20cc アンプル 3管入 錠剤ナンポール 12錠入

製 造 發 賣 元

東京都中央區日本橋虎町一ノ四番地(商況社ビル四階)

南 方 藥 品 工 業 株 式 會 社

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